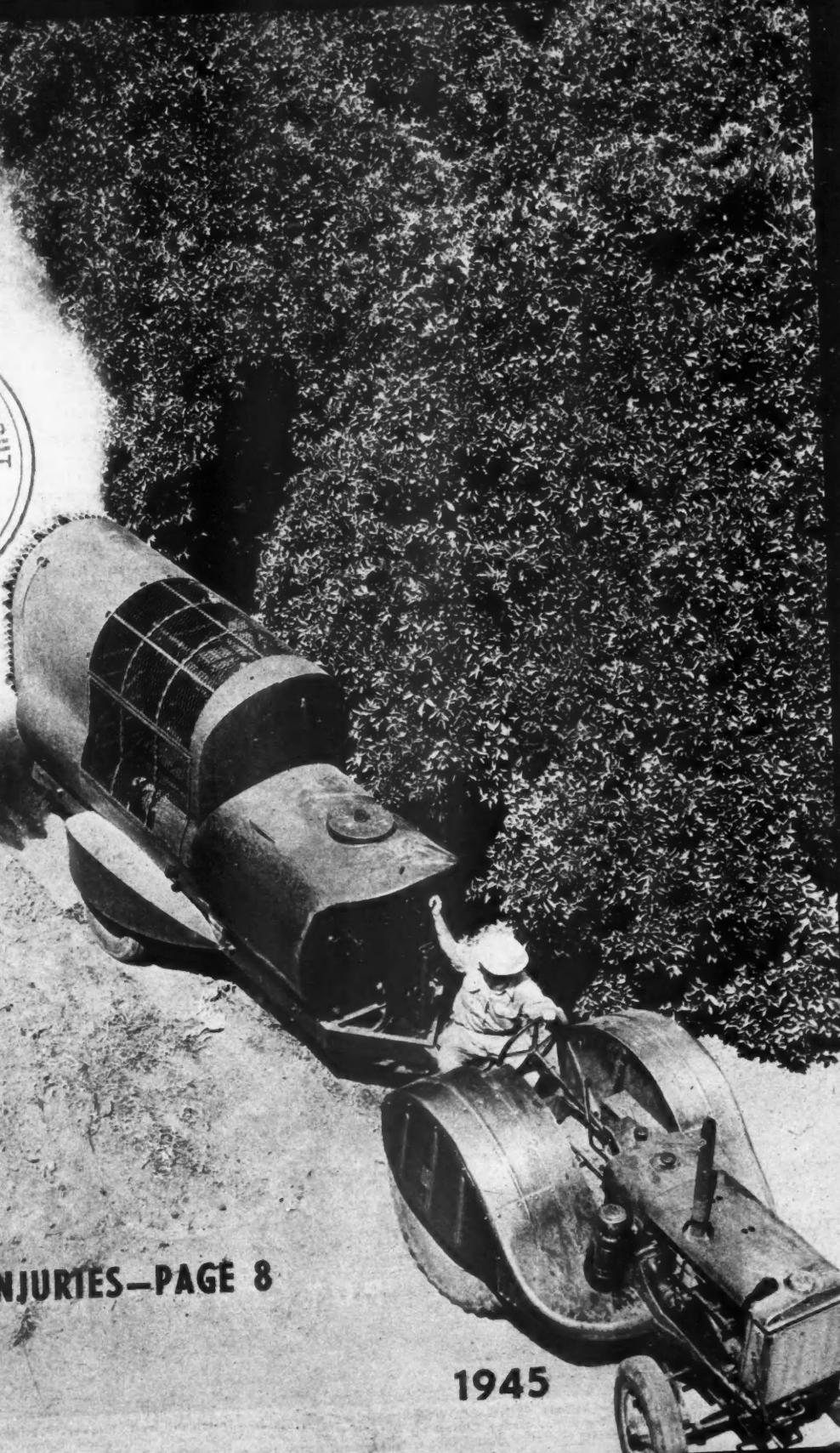


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AMERICAN FRUIT GROWER



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SON IDENTIFYING INSECT INJURIES—PAGE 8

IGAN FEBRUARY

1945

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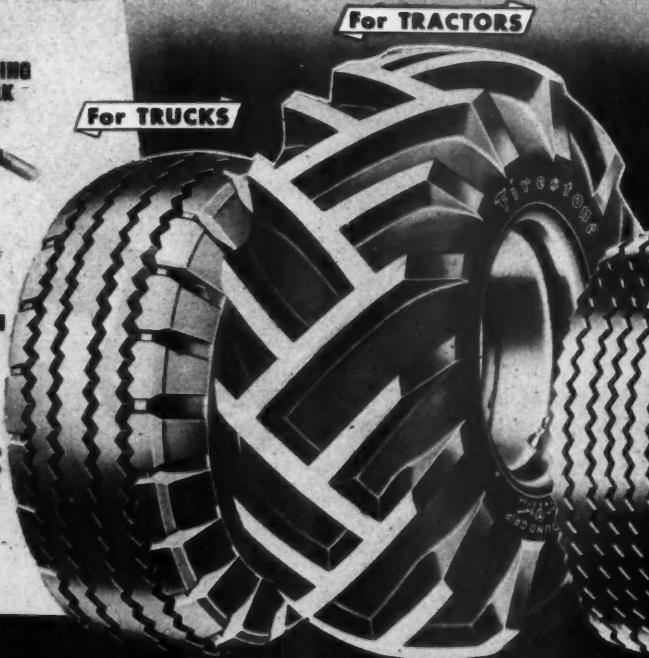
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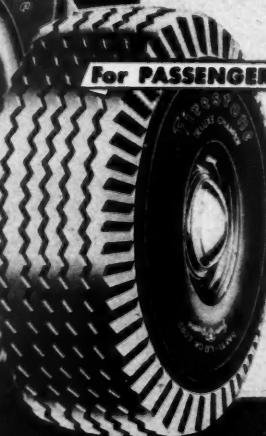
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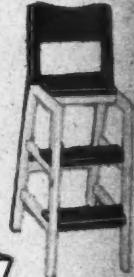
UTILITY STEP STOOL



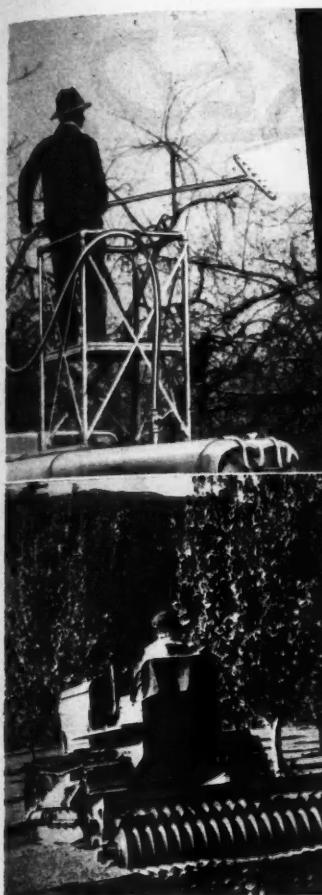
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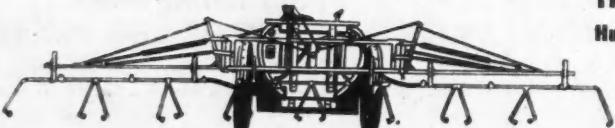
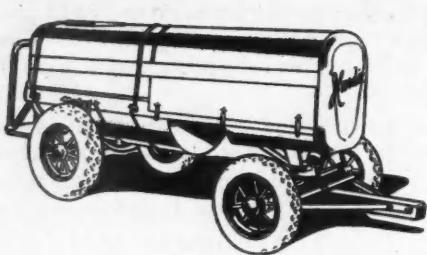
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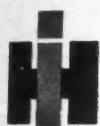


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heard of some of the plans we have made. We have told you something of the automatic 1-man hay balers . . . self-propelled combines . . . 1- and 2-row mechanical cotton pickers . . . modern farm refrigeration . . . easier control of Farmall implements. . . . We have announced these new products reluctantly. We cannot build them in quantity.

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LETTERS TO THE EDITOR

Old Subscriber

Gentlemen:
Please find enclosed a check, drawn in your favor for one dollar to pay for a subscription to *American Fruit Grower*. May your magazine prosper in the future as it has in the past.

I know my dad took the magazine as far back as I can remember and I now am 56 years old.

Santa Paula, Cal. James Connor

*It gives us a lot of pleasure to know that the son of an old subscriber continues to read *American Fruit Grower*. Established in 1884, this magazine has many old friends scattered all over the country.—Editor.*

Re: Senator Byrd

Gentlemen:
The article on Senator Byrd and the Shenandoah Valley, "How Red is My Valley" and published in the October issue of your magazine, is very heartening to me, and I want to give my personal thanks to the writer.

I spent three years with the extension horticulturist at Inwood, W. Virginia, before entering the service, hence the "Valley" apple industry is important to me. Inwood is just across the Virginia state line, 14 miles north of Winchester and, of course, Senator Byrd is well known to us.

Again thanks and, until Victory, and until our return to the apple world, keep up the fine articles.

A.P.O. 456 c/o PM David C. Nellis

Thanks for your comments. We like this kind of response and we are glad that you still read the magazine although your A.P.O. address indicates that you're far from home somewhere in the Pacific.

We'll keep the good work up and we'll pray for your early and safe return.—Ed.

Grimes Golden, Again

Dear Editor:

In your December issue, Mr. B. M. Bell of Nebraska City laments the fact that the Grimes Golden apple seems to be on its way out. I join with him because Grimes Golden is unquestionably one of the very best all-around early apples—when it is properly harvested.

I believe that one of the most potent factors in bringing about this decline in popularity of the Grimes Golden apple is early picking. My experience with Grimes is, if it is picked too early, it does not have a Grimes flavor, but it is just another green apple. The growers themselves, are to blame because everyone wants to beat his neighbor into the market with the first shipment of Grimes which usually brings a relatively high price, but, when those shriveled, unattractive, acid-green tasting Grimes reach the housewife, she stops buying apples for the time being.

In this section, the Grimes are picked early in September, even a few days earlier. If the Grimes are left on the tree until nearly, or into the first part of, October, the green color will have turned to a golden hue. Then the real distinctive and delightful Grimes flavor is developed. There is no better apple than the fully developed Grimes Golden.

Staunton, Va. W. S. Campfield.

Mr. Campfield, for the sake of the Grimes

Golden apple and for the public which is gradually being deprived of it, we hope that growers of this apple will heed your advice and will harvest at the proper time.—Editor

Double Peach Crop

Messrs.:

I notice in your November issue, page 5, mention of the fact that two peach trees bloomed twice and ripened two crops of peaches. As a peach grower, I would like to tell you what I think happened.

In 1943 we had bad frosts while peaches were in bloom. This appeared to prevent pollination on part of the blooms and these blooms made very small peaches which were very good to eat but which ripened from two to four weeks later than the main crop. They had no kernels, or you might say seed, only a very small rudiment of a seed.

Also Elberta and J. H. Hale varieties are apt to make the small late extra crop which peach growers sometimes call "nubs." Leachville, Ark. M. L. Swihart

Thanks for your version of this rather unusual incident.

GUY TRAIL of New Haven, Missouri, please note.—Editor

Pears Extraordinary

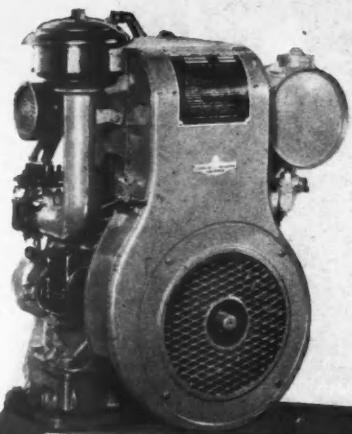
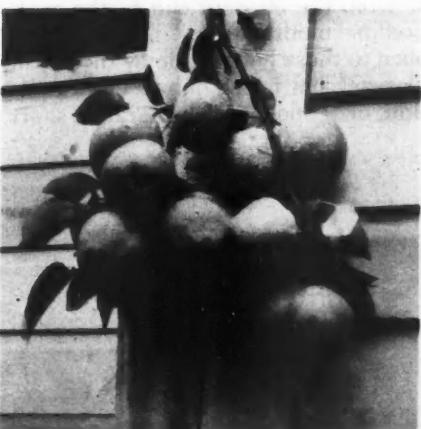
Gentlemen:

I am enclosing a snapshot of a twig from my Kieffer pear tree which has 12 pears on it, weighing $6\frac{1}{2}$ lbs. I have a small tree and I picked about 3 bushels of such pears from it. Quite a number of them weighed as much as $\frac{3}{4}$ lb. each. It really is a shame that hundreds of bushels of pears rotted on the ground this year because the dry season caused them to be small.

I trim my tree closely every year and we always have nice pears. We pick them carefully as soon as they begin to fall, place them in a dark cool place until they are nice and yellow. We can them without any seasoning and we cut out all the coarse grain around the core. When we open a can to use, my wife puts the pears in a kettle and heats them with sugar and pickling spices. We enjoy these pears very much and so do all who taste them.

I recommend that all who have Kieffer pear trees take better care of their trees and try this experiment with the fruits. Englewood, Ohio S. Berger

Thanks for the snapshot which is being reproduced below. This surely is a fine example of pear fruit abundance on a single twig. And your comments on the culinary preparation of these pears make our mouths water.—Editor.



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WISCONSIN
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ENGINE POWER
TO YOUR
FRUIT-GROWING
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Wisconsin-powered Model 4466 Bean Sprayer, made by Bean-Cutter Div., Food Machy. Corp., San Jose, Cal.

Confronted with possibly the most serious labor shortage in its history, the fruit-growing industry can best meet this problem through the more extensive use of engine-operated equipment. Only in this way can you hope to multiply the productive capacity of available man power and protect your fruit crop.

Today, leading manufacturers of orchard equipment such as dusters, sprayers and irrigation pumps are including dependable Wisconsin Air-Cooled Engines as self-contained power units on their equipment. Wisconsin engines are always ready to go, in any weather, and are free from cooling troubles and attention.



Cranberry Harvester (left), used by members of a co-operative cranberry growers association at Aberdeen, Wash., for picking cranberries by employing Wisconsin-powered suction.

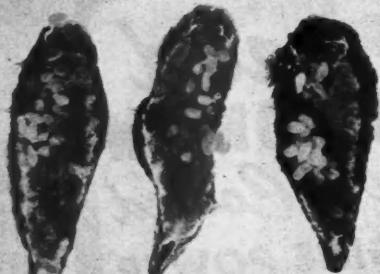


Wisconsin-powered portable pump, made by Jaeger Machine Co., Columbus, O.

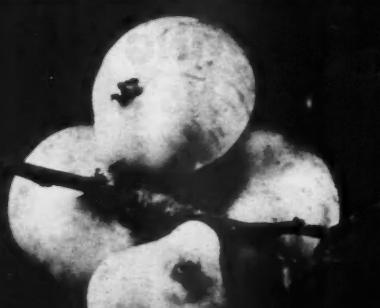
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World's Largest Builders of Heavy-Duty Air-Cooled Engines

IDENTIFY INSECTS

Peach Tree Borer



Oyster Shell Scale (eggs)



Aphis Injury



Pear Blister Mite Injury

Round-headed Apple Tree Borer

WHETHER you see the "bug" or not, you know that something is working on your orchard tree or small fruit plant when you see that the leaves are undersized, crinkled or rolled, or that they are partly eaten and pale in color. You note that the fruits are small, misshapen or deformed in various ways. Even the twigs may be rough and "broke out" with lesions of various sorts. In a few instances you may have a whole tree die from some unknown injury, or at least from an injury that is not apparent at first sight.

There are two ways to learn what is the trouble. You must see and identify the agent, causing the injury, or secondly, you must identify the injury without seeing its cause. Since the latter is usually more readily observed by the fruit grower, it seems wise to employ that method in this discussion.

Injuries of the Apple

Apples as well as other fruit plants are attacked by a host of insects. Many are relatively harmless, causing very little injury. Others, which are ordinarily held in check by the regular spray program, would cause considerable injury if the spraying operation were omitted or lightened. Still others cause great losses and are often very difficult to control. The latter are discussed first leaving the less important to last.

Codling Moth

This is by far the most important insect pest of the apple in America. The injury of this insect is very apparent to any grower. The apples attacked have holes eaten into the side, or from the blossom end to the core. Codling moth "stings" is a term applied to those holes made by the worm (larvae) but which only penetrate the skin, or at most only penetrate a short

way into the fruit. These blemishes are quite serious and lower the grade of the apple. The little, pinkish-white, brown-headed worm tunnels his way throughout the core and seeds, leaving dark masses of frass or castings, which protrude from the entry hole. When such holes are observed in the fruit there is no doubt that the cause is the codling moth worm. The adult moth causes no injury.

Plum Curculio

This is an important pest of the apple and other fruits. The first injury noticed on the tiny fruits as they begin to develop is one or more small crescent-shaped cuts in the skin. Some will have a little round hole opposite the concave side. Later as the fruit develops these injuries cause swellings or knots. Occasionally the injury will cause a depression around the hole instead of a swelling. During the latter part of the summer, punctures are made through the skin of the fruit and the flesh is eaten out beneath the holes. Curculio infested apples, in general appearance, appear hard, knotty, small, and misshapen. Many fall during the latter part of May and June.

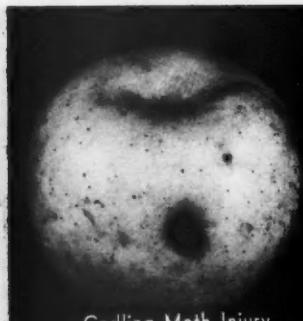
Apple Maggot

This $\frac{1}{4}$ -inch long larvae of a black, white, and yellow fly injures apples in the colder sections of the apple growing regions of the United States. It is commonly known as "railroad-worm."

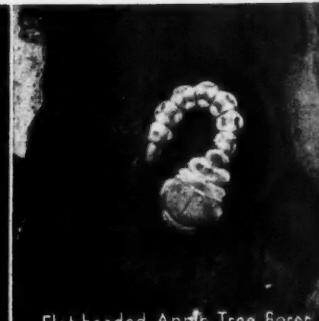
If an apple possesses brown winding galleries, running through the outer part of the flesh with tiny punctures and pitted areas on the surface, it can be certain that the apple maggot is at work. In ripe fruits, the burrows show as dark lines beneath the skin. Early varieties may rot on the tree when infested severely while late varieties may cork over the burrows and not completely rot.



Adult Pear Psylla



Codling Moth Injury



Flat-headed Apple Tree Borer

INSECT INJURIES

by ELDON S. BANTA

Apple Red Bug

This is a sucking insect that causes considerable damage in the East during some years. The main character of the injury is the dimpled or pitted appearance of the fruit, the circular pits often extending deep into the apple. The apple is dwarfed, somewhat hard and woody of texture, and occasionally russeted in spots. The infested fruits may look similar to those injured by rosy aphids, but the "aphid apples" do not have the pits.

San Jose Scale

This is the most important scale insect that infests the apple and other fruits. The best identification is the presence of the scale on the twigs and trunk of the tree. To the naked eye the scales appear as small grayish disc-shaped specks on the surface of the bark. By use of a hand lens (magnifying glass) a raised nipple-shaped spot can be observed at the center of the scale. The bark is frequently reddened for a short distance around the scale. Infested trees show a lowering in vigor and death of terminal twigs in severe cases, and unless controlled the tree may die in a short time. The scale also attacks the fruit, producing the excessively red color around the scale. The scales are usually more abundant around the blossom end of the apple.

Miscellaneous

Scurfy scale is rarely of importance on apples. The grayish-white pear-shaped scale of about $\frac{1}{8}$ inch in length will designate the presence of this insect.

Oyster-shell scale occasionally is a severe pest. The scales are about three times as long as wide, being about $\frac{1}{8}$ inch in length, dark brown in color and in general appearance they look like half of a miniature oyster shell. The scales are usually

clustered on the bark of the twigs and limbs. The trees lose vigor and, if uncontrolled, the pest will soon kill the tree.

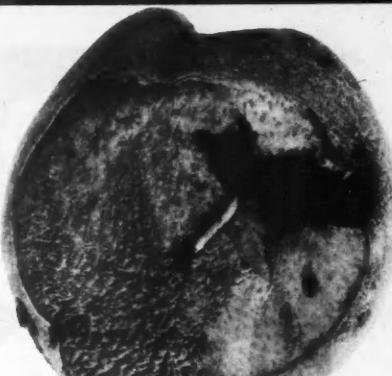
The rosy apple aphid is the most important of three species of aphids infesting the apple. The other two are the green apple aphid and the apple-grain aphid. Their injuries are very similar in appearance and effect. They feed upon the leaves, causing them to curl and the stems and twigs become stunted and lack a vigorous appearance. New growth of twigs often is curled, twisted, and even may form a loop. Apples attacked by aphids remain very small and in general present a hard, knotty, misshapen appearance with a characteristic puckering of the calyx end. No other insect injury gives quite this appearance.

Apple leafhoppers frequently cause considerable damage to the foliage of apple and other fruit trees. The detection of the work of these insects is readily made during late summer. The foliage becomes pale in color with little flecks of greenish-white showing through from the lower surface of the leaves. Severely infested leaves fall from the tree. The new terminal foliage is often stunted and curled, and the margins appear burned.

European red mite has become a major fruit insect in the Eastern United States. Light injuries of this mite show a specking of the foliage. In severe infestations the foliage is pale and sickly with a characteristic bronzed appearance which from a distance makes the tree appear to be covered with dust. Injured leaves often drop and the fruit of infested trees is small with poor quality and color. Fruit buds are weakened.

The flat-headed apple borer is one of two borers infesting apple and other fruit trees. This insect reveals

(Continued on page 14)



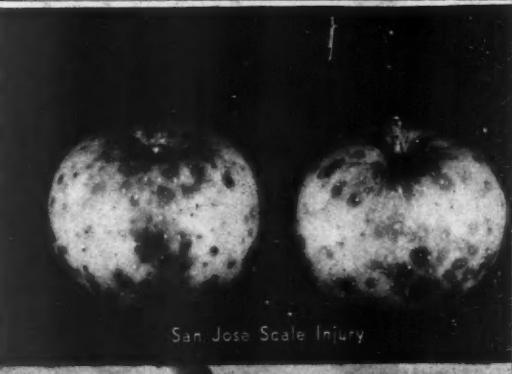
Oriental fruit Moth Injury



Apple Flea Weevil Injury



Tarnished Plant Bug Injury



San Jose Scale Injury



Pear Slug Injury



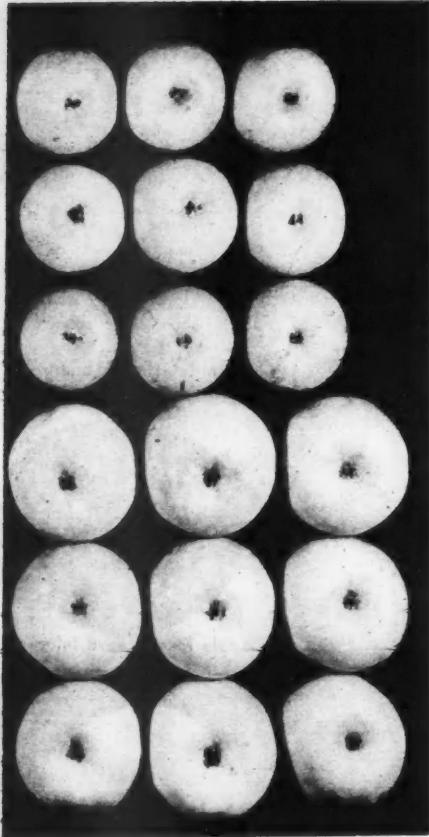
Oriental fruit Moth Injury



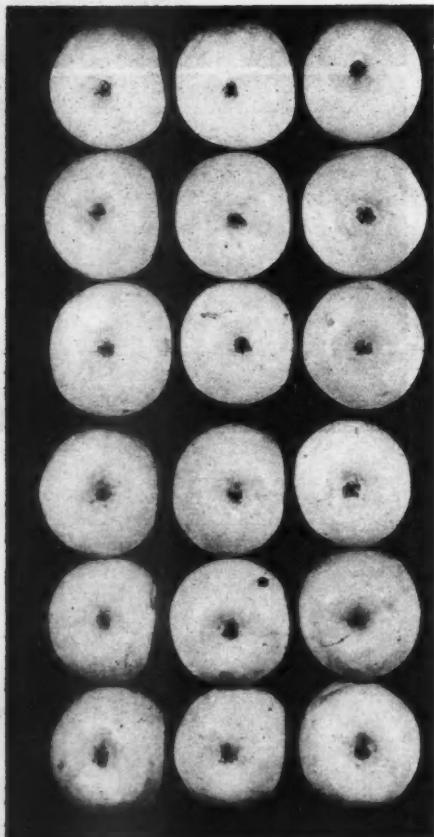
Leafhopper Injury



Oyster Shell Scale



The upper group of Grimes apples was sprayed with Bordeaux 4-6-100. The lower group of apples was sprayed with Methasan.



The upper group of Grimes apples was sprayed with Puratized N5-D. The lower group of apples was sprayed with Fermate.

NEW TRENDS IN FUNGICIDES

By H. C. YOUNG

Chief Department of Plant Pathology
Ohio Experiment Station

FUNGICIDES for fruit disease control came into general use with the introduction of Bordeaux mixture in 1882 and lime sulphur in 1908. These two compounds have remained in the spray program ever since. However, during the entire period an almost continuous attempt has been made to devise substitute products. Almost every conceivable combination of both copper and sulphur has been made and tried with the result that to date only a few can be considered as important competitors and these have by no means replaced the two old compounds.

The reason for all of this search for new materials was not due so much to the lack of efficiency in controlling disease but more to the injury caused. Theoretically both compounds are ideal fungicides under ideal weather conditions but, unfortunately, both may seriously injure foliage under adverse conditions. This injury is so serious that neither would be used at all if suitable substitutes were available. Then too, the pest situation is changing to the extent that new combinations of fungicides and insecticides are required. An outstanding example is the failure of lead arsenate to control codling moth in many orchards. It is necessary to use a supplementary program with oil and the latter is entirely incompatible with sulphur. That leaves us without a summer fungicide for apples

since copper cannot be used in the northern fruit growing region. With such a program, scab and black rot may become troublesome or build up from year to year to serious proportions.

In the southern apple growing region the problem is equally serious and is further complicated by the existence of bitter rot, blotch and fruit spot. These diseases require copper for effective control. Bordeaux and all of its copper relatives generally russet yellow varieties and, in addition, cause foliage injury to most varieties. Such conditions make competition difficult for growers located in such a section.

The time has come when fruit growers everywhere need new fungicides and insecticides. This does not mean, for the time being at least, that sulphur and copper compounds are no longer needed. It does mean that these products can no longer fill the position they once held. It means further that the 40 years' search for substitute copper and sulphur compounds has failed to correct the difficulties.

A few years ago research was directed toward the formulation of entirely new fungicides. The results have been rather spectacular; so much so that already several are beginning to appear on the market. They do not contain copper or sulphur in the sense we are accustomed to using those ele-

(Continued on page 26)

Apple Bitter Rot—Results 1944 Variety Grimes

Materials (Based on 100 gal. spray)	Rotted apples (percent)	Size of Fruit (Apples per bu.)
Bordeaux 4-6-100	0.41	347
Methasan 1½ lb.	14.25	192
Fermate 2 lb.	0.58	203
Puratized N5-D ½ pt.	0.0	214

Spray dates as follows: May 4 (calyx), May 15, June 6, June 20, July 25, August 7. Bordeaux spray omitted on May 4, and August 7. Average of 5500 apples counted per treatment. The relative size and finish are shown in the accompanying photos.



CONTROLLING THE CODLING MOTH IN 1945



By W. S. HOUGH

Winchester Research Laboratory
Virginia Experiment Station

THE build-up of large codling moth populations in many apple orchards has raised the questions, "What can we do this year to obtain better control of the insect? What are the best spray materials available and when should I use them?" No entomologist will attempt to answer these questions for all sections of the country. Requirements for satisfactory control will differ in different apple growing areas.

In the first place, requirements for control in any one area of eastern United States in 1945 will be closely related to the kind of weather which prevails in that area. Cool or wet weather when the moths are flying and egg-laying is in progress, will depress egg-laying, reduce wormy injury, and simplify control requirements more than any other factors involved.

In the second place, requirements for control are related to the yield or size of crop in the orchards. Other things being equal, it is much more difficult to grow a high percentage of clean fruit on trees bearing relatively few apples. The moths deposit most of their eggs on the leaves near the apples or on the apples. Consequently, the concentration of eggs around the apples increases when relatively few fruits are on a tree.

Wherever codling moth injury has been severe one can expect to find inadequate spray coverage in the upper third of each tree. There is little

doubt that failure to spray the fruit in the tree-tops as thoroughly as that on the lower branches is the weakest point in a great majority of spraying operations against the codling moth. No insecticide will correct this weakness. So the first thing to emphasize is the necessity of applying a top-off spray before or after each and every cover spray in orchards exceeding 20 years of age. Where the modern "speed-sprayers" are used on tall trees, it is necessary to keep one or more portable sprayer operating for the sole purpose of spraying the tree-tops from a tower mounted on the sprayer.

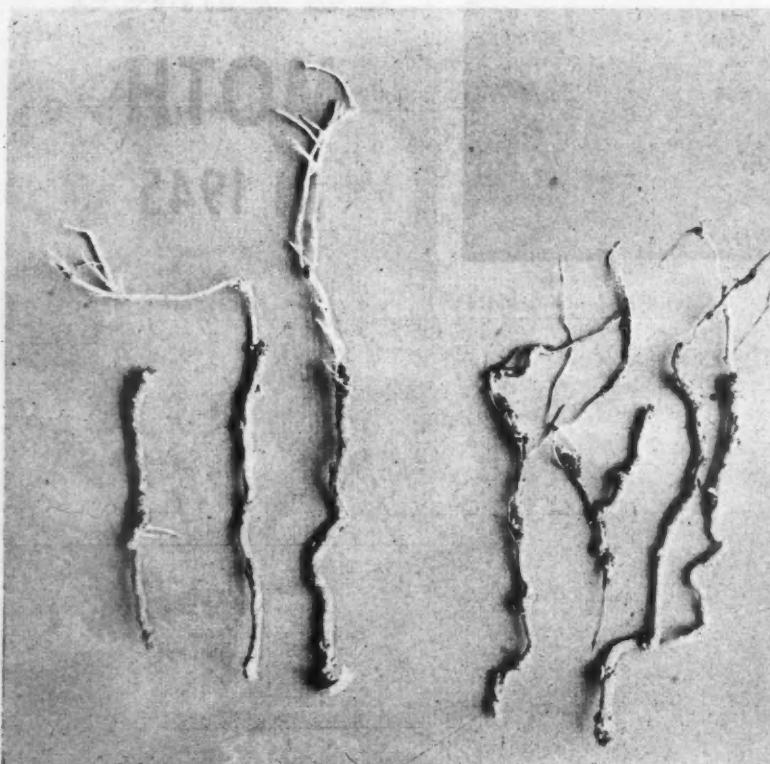
Experimental evidence indicates that the new insecticide DDT is considerably more effective than lead arsenate in controlling the codling moth. At this writing it does not appear that sufficient quantities of DDT will be available for general use in 1945 and lead arsenate must continue as our chief insecticide.

Lead arsenate at 3 pounds per 100 gallons in severe infestations should be fortified with 2 to 3 quarts of summer oil in at least two cover sprays against the first brood. But growers who use a sulfur fungicide in the calyx spray should not add oil until nearly three weeks later due to the fact that oil and sulfur are likely to cause severe foliage injury. It is likely, therefore, that the first cover spray must be applied before oil can be used on the trees. Increasing the dosage of lead arsenate to 4 pounds or even 6 pounds per 100 gallons has done much to reduce "stings" which are so conspicuous in severely infested orchards where 3 pounds of lead arsenate has been used. A good corrective for arsenical injury consists of $\frac{1}{2}$ pound of zinc sulphate and 2 pounds of lime per 100 gallons. If oil is used to fortify the lead arsenate in the second and third covers, the fourth cover coming near the end of first brood

(Continued on page 30)

A NEW WEED KILLER

The Use of Growth-Regulating Substances As Herbicides



These are bindweed roots killed to a depth of at least 14 inches by a water spray of 2-4-D at rate of 1 to 1000. Left: untreated, not injured. Right: treated, split, disorganized, and dead.

THE story has been written about the remarkable effects of minute quantities of certain growth-regulating chemicals in preventing the pre-harvest drop of apples, in promoting the rooting of cuttings, and in setting greenhouse tomatoes. Now comes a new suggestion for this remarkable group of chemicals—this time as weed killers or herbicides. The topic is doubly of interest to fruit growers because of the names familiar to them, which have been associated with the development.

To begin with, it has been known for a dozen years or more that the effects produced by growth-regulating substances are not always to advantage. When used in too high concentration or on sensitive plants, the result may be to induce undesired curvatures, twistings, and bendings and drooping and folding of the leaves. In fact, in 1941, Dr. E. J. Kraus of the University of Chicago suggested that some of the anomalous growths produced by growth-regulating substances might be used to advantage to bring about the death of plants, in short, as herbicides.

At about the same time Dr. P. W. Zimmerman and Dr. A. E. Hitchcock at the Boyce Thompson Institute for Plant Research at Yonkers were busy synthesizing new chemicals and studying their properties as growth regulators. One of the materials prepared by them and offered generously to others with which to experiment was 2,4 dichlorophenoxyacetic acid, shortened for convenience to "2-4-D." It proved to be the most potent of any plant growth regulator yet discovered—so potent, in fact, that it was doing more harm than good in the hands of many working with it.

At this point, Dr. J. W. Mitchell and Dr. C. L. Hamner of the U. S. Department of Agriculture at Beltsville, Maryland, in reporting laboratory results with the chemical suggested that it be tried for herbicidal effect. Their suggestion was not long in being followed.

The scene shifts next to the Experiment Station at Geneva, New York, where in a stool block of dwarfing rootstocks an infestation of bindweed had developed which threatened to ruin the supply of these valuable

By H. B. TUKEY

Chief in Research
New York Experiment Station

plants. During the summer of 1944, seeking a solution to the bindweed problem, Dr. Hamner and the writer applied a water spray of 2-4-D at the rate of 1 to 1,000 from a knapsack sprayer, using just enough spray to lightly wet the foliage of the bindweed. The response was at once impressive. The plants took on a dark green color, lay flat to the ground, became stiff and were arrested in development. Flowers did not open. At the same time, the below-ground parts became enlarged and split. Within 10 days these were dead and disintegrating, and the above-ground parts dried up and died. The bindweed was affected to a depth of 14 inches, and suffered a most severe check. The apple rootstocks were apparently not affected.

The material was applied to other plants during July, August, and September, also with striking results. For example, sow thistle, narrow-leaved plantain, dandelion, lamb's quarters, round-leaved mallow, chickweed, pigweed, and ragweed were destroyed; purslane, Canada thistle, milkweed, and poison ivy were severely checked; but grasses were in general only slightly if at all affected. The effect on dandelion and narrow-leaved plantain was to produce lengthening and broadening of the base of the leaf until it became ribbon-like, twisted, and whitish. With lamb's quarters, pigweed, and round-leaved mallow, the main stems became bent and split. With sow thistle the below-ground parts proliferated enormously and literally grew themselves to death. With poison ivy the formation of chlorophyll was checked, and the plants became chlorotic and weak.

The next step was quite naturally the application of the 2-4-D to a Kentucky bluegrass lawn infested with dandelion, narrow-leaved plantain, white clover, and round-leaved mallow. Applications were made in late August and September. Within 10 days, the plantain, dandelion, and mallow were dead and disintegrating and

(Continued on page 31)

R
des

**FIVE
YEARS'
EXPERIENCE**

WITH THE



SPEED SPRAYER

By P. D. PETERSON

Director Technical Activities
American Fruit Growers, Inc.,
Hagerstown, Maryland

WHEN the Japs rudely awakened Uncle Samuel from his Rip Van Winkle slumbers at Pearl Harbor, the "forgotten men" of the depression years became the "indispensables" of our war effort. Almost overnight a labor surplus became a labor shortage, and no easement is yet in sight.

Agriculture as well as industry has been hard hit by the manpower shortage. Both have sought relief through the development of labor saving devices. The fruit grower, in particular, has felt the pinch of loss of help. His is a highly specialized art, requiring the services of experienced workers, now lost to the military services and war plants.

Fortunately for the fruit grower—and Uncle Sam—mechanization of fruit production was already well advanced prior to Pearl Harbor. The war has both helped and hindered this trend. Shortages of material have prevented many growers from replacing worn and obsolete equipment; shortages of labor have forced others to resort to labor saving devices and "short cuts" in orchard practices.

Perhaps in no phase of orchard operations has the ingenuity of man been more apparent than in the field of pest control. A whole array of new devices and materials has seemingly appeared overnight to confuse the pests and to comfort the growers. From California come favorable re-



ports of a new hybrid, the "Sprayer-Duster"; Florida, not to be outdone, has given us the "Speed Sprayer"; also vertical booms adapted to high-pressure portable sprayers have appeared in orchards in many states. All lay claim to being "labor savers", to doing a good job in less time, with less help and at lower cost. Better control with less material is a slogan of some.

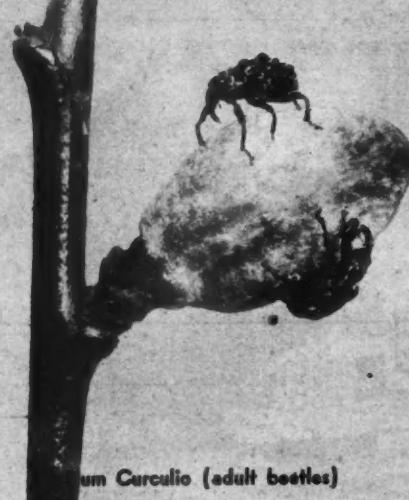
Of the new machines now available to apple and peach growers in the North, Central and Eastern States, probably none has had wider and more favorable acceptance than the Speed

Sprayer, developed during the depression years by George W. Daugherty, a pest-control operator in Orlando, Florida. This machine, designed originally for use in Florida citrus groves, made its first appearance in apple and peach orchards on the Delaware-Maryland Eastern Shore in 1940. Its performance on peach was outstanding; on apple it was encouraging. Tops and centers of large trees were reached with some difficulty, and only at a sacrifice of speed. Some felt that the name Speed Sprayer was an unfortunate misnomer. All

(Continued on page 32)

IDENTIFYING INSECT INJURIES

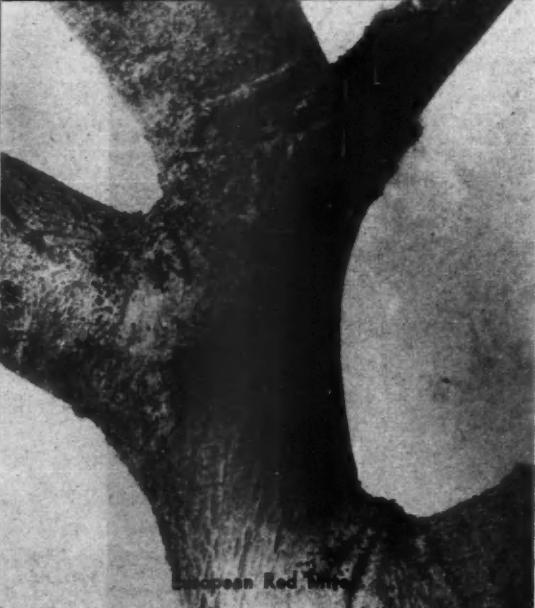
(Continued from page 9)



Plum Curculio (adult beetles)



Apple Red Bug Injury



European Red Mite



Apple Maggot Injury

his presence by broad, shallow, irregular mines or burrows, just under the bark on the main branches or trunk. The larger ones penetrate an inch or more into the wood. Dark colored and dead areas of bark with exuding sap appear above these burrows. They are usually on the sunny side of the tree but they may extend completely around the tree. Large areas of the bark are frequently killed and sometimes a large branch or the trunk may be girdled, thus killing the tree.

The other, the round-headed apple borer, feeds on the inner bark and sapwood of the tree. The burrows are usually made in the base of the trunk anywhere from a foot above ground to 2 inches below. The darkened areas at the base of the tree which are accompanied by the coils of sawdust-like particles adhering to the bark, or on the ground, are sure indications of the presence of this insect.

Injuries of the Pear

The pear psylla is one of the most important pests of the pear in the northeastern part of the country. The very small yellow nymphs, feeding on the leaves, cause them to turn brown and often to drop. They also may be seen on the fruits of an infected tree. Severe infestations cause the leaves and fruit to become covered with a honeydew which in turn may become coated with a black fungus later in the season.

The pear leaf blister mite causes brownish blisters to appear on the under surface of the leaves. The mite, in working under the fruit bud scales, causes them to turn brown and to open somewhat during the winter. Fruits produced from infested buds are small, misshapen and russeted. Under magnification of the leaf blisters, tiny whitish or pinkish mites can be seen within the blisters.

Pear thrips injure the buds before they open in the spring. The injured bud turns brown and shrivels. A heavily infested orchard will look as though it had been burned by fire. The female thrips puncture the blossom stem, frequently injuring them so badly that they drop.

The sinuate pear borer sometimes kills an entire young planting by girdling the trees. The injury may be noticed by the narrow winding tunnels in the inner bark and sapwood, together with canker-like areas from the base of the tree to the small lateral branches. From the outside these burrows may be seen from the splitting of the outer bark accompanied with

dark dead lines. When abundant they may completely girdle the tree.

The San Jose scale as described under the apple also attacks the pear. The type of injury is the same.

Codling moth injury may also be seen on pear fruits.

Injuries of the Peach

The peach borer is the most destructive insect of the peach. Its injury is familiar to every grower. Trees with masses of gum, exuding from around the base of the tree, are a sure sign that borers are at work. Bits of brownish frass or sawdust are usually mixed with the gum. Tiny white worms with brown heads of from $\frac{1}{8}$ to $\frac{1}{4}$ inch long can be found tunneling in the bark of the tree trunk, usually from about 10 inches above the ground to 2 or 3 inches below ground. If not controlled, the worms will so severely injure the tree that it will die.

Attacks of the lesser peach borer may be distinguished from those of the above species by the fact that it attacks the larger branches and upper part of the trunk rather than the base of the trunk. Its presence is visible by the masses of exuding gum mixed with sawdust-like material which comes from the entry hole. The gum exudings are frequently noticed in the forks of limbs and around splits or around other injuries to the branches.

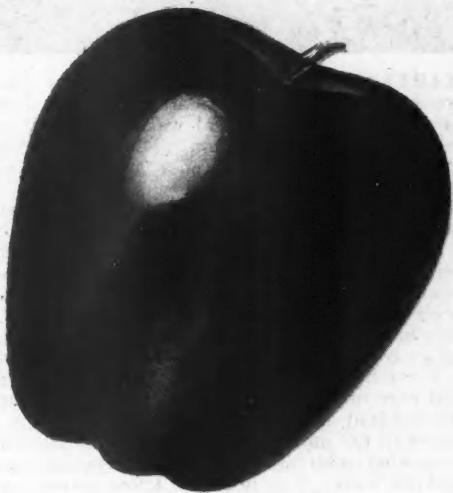
The oriental fruit moth is a serious peach pest, particularly in Eastern United States. Whenever the new growth of a peach tree is seen to be dying back, examination should be made to determine if it is due to the worm (larvae) of this moth. If the worms are pinkish white with brown heads, similar to codling moth, the injury is certainly due to this insect. This worm also causes wormy fruit, much the same as the codling moth does with the apple. However, with oriental fruit moth, the presence of the worm in the fruit may not be seen from the outside, the young worms having made their entry through the stem. A perfect-looking peach may be broken in half and may be found tunneled through the flesh, particularly around the pit, by this worm.

The plum curculio, also described under apple insect injuries, is a serious peach pest. The adults injure the fruit in much the same manner as with the apple, by feeding and by the crescent-shaped egg-laying punctures.

(Continued on page 22)

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For three decades Black Leaf products have continued to grow in popularity and use. Thousands of orchardists depend upon these products for protection of apples and other fruits. The swing to Black Leaf 155 and Black Leaf 40 programs continues—increased yearly sales prove the genuine merit of Black Leaf products.



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BLACK LEAF 155

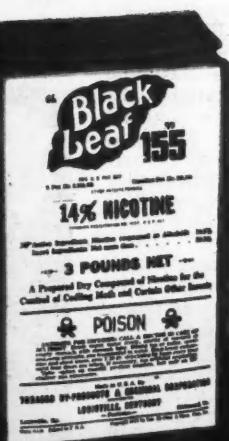
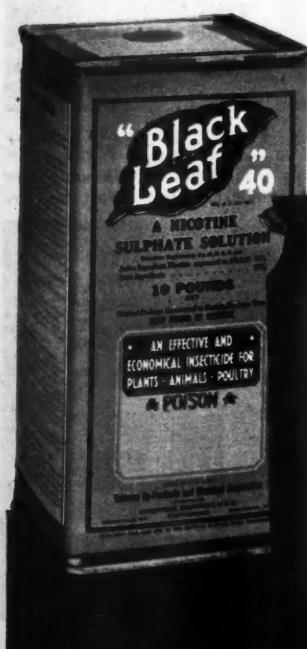
- For codling moth cover sprays, use Black Leaf 155. Non-caustic protection for foliage permits the manufacture of more food by the leaves and matures fruits of larger size. Black Leaf 155 controls codling moth, aphids, leafhoppers, bud moth, leaf miners, pear psylla and grape berry moth.

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STATE NEWS

MARYLAND—Maryland apple growers are getting all the information possible so they can deliver a real wallop to the codling moth next season. They know that hot dry weather, poor coverage, wrongly-timed sprays, and possibly incorrect mixtures, were causes of great damage and loss of fruit.

Some growers have been using war-prisoner labor in pruning work and they report rather good results. That long-neglected pruning of the past few years may be a great step in allowing for better spray coverage for codling moth control.

There has been considerable moldy core and core breakdown this year in some of the red bud apple sports. This may be a result of the unusual season, or it may be connected with maturity of the fruit at picking time. We need to know more about the proper time of harvesting the various bud sport varieties.—A. F. Vierheller, *Extension Horticulturist, College Park*.

KANSAS—Fruit trees and forest trees were badly damaged in the heavy producing apple section of northeast Kansas by an ice and sleet storm December 2-3. The ice was so heavy that many trees were permanently damaged. The most severe damage occurred in the vicinity of Troy in Doniphan, Kansas.—Geo. W. Kinkead, *Sec'y, Topeka*.

INDIANA—The Indiana Horticultural Society elected David Simpson, Vincennes, President, and Lorne J. Doud, R. R. 1, Wabash, Vice President for the coming year. Both of these young men are graduates in Horticulture at Purdue and both are affiliated with large orchards.

A highlight of the meeting was the presentation of a certificate to Mr. R. A. Simpson, Vincennes, for 50 years of service to Indiana horticulture.

A gavel made from a limb of the original Turley tree was presented to the Society by Dr. G. Edw. Marshall.

The Quality Plus Club presented medals to growers who produced a clean crop of apples. Growers of ninety per cent or better U. S. No. 1 clean fruit received a gold medal and the following qualified this year:

L. V. Doud & Son, R. R. 1, Wabash.
R. W. Gregory, Mooresville.
Simpson Orchard Co., Vincennes.
W. J. Teel, Owensesville.
Bristol Orchard Co., Bristol.
Floyd Jacoby, Plymouth.
Martin Davis, Daleville.

A silver medal was awarded for a crop of 80-90% U. S. No. 1 clean fruit to Roy Tuttle, Greenfield.

Membership dues to the Indiana Horticultural Society have been increased to \$2 per year.—K. I. Fawcett, *Sec'y, Lafayette*.

KENTUCKY—Our commercial strawberry areas of Kentucky are making plans to plant a larger acreage this spring than was planted in 1943-44. Our cooperative Strawberry Association at Paducah had a membership of over 2,000 farmers in normal years, however, the farm labor shortage, together with the farmers who have joined war industry plants, has cut our normal acreage about 70 per cent. The

continuous rains of the past March and April also made it almost impossible to set out strawberries. The few growers who set out their berries in February of 1944, now have some splendid crop prospects.

Our Extension organization is especially recommending that berry growers prepare their land during the first good weather in early February, so that they can set the berries early this spring.

Strawberries naturally follow tobacco in the farm crop rotation and many berry growers will set out their berry crop without re-working the old tobacco field. This is an excellent practice to follow in Kentucky berry districts.

Strawberry growers are now making a winter application of 200 to 400 pounds of superphosphate per acre, broadcast directly on top of the matted row of plants. This simple and economical treatment in the past has boosted some strawberry yields from 30 to 60 crates per acre.—W. W. Magill, *Field Agent, Lexington*.

MINNESOTA—The outlook for the 1945 strawberry crop in Minnesota is not good. There was relatively little new planting last spring and the older plantings were damaged by unfavorable weather conditions and by lack of snow cover during the winter of 1943-44. Furthermore, there was little snow cover before January 1 this year. Weather records at Minneapolis show a snowfall of only one inch in December as compared to a normal of over 7 inches. The Minnesota crop is likely to be only a small fraction of its normal pre-war volume.—J. D. Winter, *Sec'y, Mound*.

CONNECTICUT—Over 300 fruit growers attended the 54th annual meeting of the Connecticut Pomological Society at the Hotel Bond in Hartford. Fruit growers from New York, Vermont, Massachusetts, and Rhode Island also attended. Present and pest-war problems in fruit production and marketing were discussed.

The out-of-state speakers included Dr. F. A. Motz, International Commodity Specialist, Office of Foreign Agricultural Relations, who gave an interesting discussion on "The Outlook for American Fruit Growers"; Mr. John Chandler, Executive Secretary of the National Apple Institute, discussed pertinent topics regarding the "Complications and Benefits of the National Apple Program"; Mr. Walter E. Piper, Division of Markets, Massachusetts Department of Agriculture, gave an instructive talk on "Apple Market Observations" as they pertained to New England fruit growers.

Speakers from the Connecticut Agricultural Experiment Station were Dr. Philip Garman who spoke on "Trends in Insect Control," and Mr. E. M. Stoddard on "The Latest in Fruit Disease Control." From the University of Connecticut, Professor J. S. Owens, Extension Agronomist, discussed the fertilizer situation and advised growers to order and take delivery early on all fertilizer materials.

The growers were enthusiastic about the motion picture on apple harvesting, "It's Up To You." This picture, with sound and color, was prepared by Sears Roebuck & Co. and is distributed through the National

Apple Institute.

Highlight of the two-day session was the testimonial dinner in honor of Professor S. P. Hollister, who retired as Head of the Department of Horticulture at the University of Connecticut on September 15, 1944, after 35 years of service. Two hundred and fifty members of the Connecticut Pomological Society, the University of Connecticut, and the Connecticut Tree Protective Association, and friends were present.—H. A. Rollins, *Extension Specialist, Storrs*.

(Continued on page 36)



President-elect Norbert Kneuer, Jr., left, receives from retiring President E. J. Graham, the traditional gavel of the Connecticut Pomological Society at its 54th annual meeting.



John Lyman, right, fruit grower and Conn. representative on National Apple Planning Committee, chats with Orrin P. Kilbourn, grower and owner of Orkil Farms, West Simsbury.



Emeritus Professor Sherman P. Hollister, left, receives a gold watch and chain from Professor Albert E. Waugh of the University of Connecticut, along with a gift of \$400 cash.

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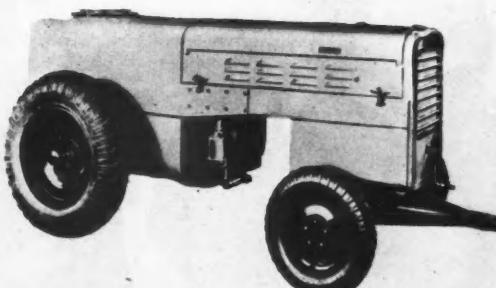
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CAMERA
AT
MARYLAND AND
PENNSYLVANIA
SOCIETY
MEETINGS



GROWER GROUPS AT ANNUAL MEETINGS
OF STATE HORTICULTURAL SOCIETIES

Right—Growers and officers of Pennsylvania Horticultural Association, left to right: H. M. Anderson, grower, New Park; R. Johnson Gillian, Gillian Bros. Orchards, Ft. Thomas, Pa.; J. Eric Linde, President, Orefield; J. U. Ruef, Secretary-Treasurer, State College; Frederick Griest, Vice President, Flora Dale; H. F. Hershey, Peerless Orchards, Harnburg, Pa.

Below left, left to right—Dr. R. D. Anthony, State College, Pa.; J. Eric Linde, Orefield, Pa., and Frederick E. Griest, Flora Dale, Pa.

Below right—Discussing disease and insect control are, left to right: J. D. Hutchison, County Agent, Wilkes-Barre, Pa.; Nelson Lewis, Pittston, Pa.; William Smith, Berwick, Pa.

Top—Maryland growers talk over problems with the specialists. Left to right: D. T. Walker, Society President, Mt. Airy; Dr. Ernest N. Cory, State Entomologist; Dr. C. Graham, Extension Entomologist; J. G. Harrison, grower and nurseryman, Berlin; Dr. B. A. Porter, Senior Entomologist, U.S.D.A.; Dr. E. A. Walker, University of Maryland Plant Pathologist; Fulton Allen, grower and nurseryman, Salisbury; Stanley Fulton, grower, Hancock; S. B. Waddell, grower, New Windsor; W. C. Main, grower, Hagerstown; D. Eldred Rinehart, grower, Smithsburg; Harvey B. Raffensperger, grower, Arendtsville, Pa.; A. F. Vierheller, Society Secretary, College Park, Maryland. Left—Maryland State Horticultural Society officers, left to right: Dwight T. Walker, President; Lloyd Balderston, Vice President; Albert F. Vierheller, Secretary-Treasurer.

AMERICAN FRUIT GROWER
PHOTOGRAPHS



NOTES ON FRUIT GROWER MEETINGS

Maryland

NEW ideas are always prominent at fruit grower meetings. The Maryland State Horticultural Society meeting held last month was no exception. Since Maryland is a state with a definite codling moth problem, it was natural for growers to turn their attention to new methods of combating this orchard pest.

Their attention in this matter was centered around the use of the new insecticide, DDT, which has been popularized in the past several months. Dr. B. A. Porter, Senior Entomologist of the U.S.D.A. brought growers up-to-date on this new insecticide. His remarks impressed growers with the possibility of using this material in the near future. However, it is yet in the stage of experimentation and much must be learned about it before it can be sold to the fruit industry for general use.

Growers were interested in the production figures presented by Dr. A. L. Shrader, Research Horticulturist, University of Maryland. From data available he gave the average total cost per bushel for apples as approximately \$2.01, or about \$188.37 per acre. For peaches in 1943, the same year, the average total cost per bushel was \$1.76, or about \$195.50 per acre. Dr. Shrader further pointed out that an increase of from 100 bu. to 200 bu. per acre in yield would mean a decrease in the cost of production of 36 cents per bushel. Growers were therefore urged to increase their yields for greater efficiency.

Pennsylvania

Growers at the Pennsylvania State Horticultural Association Meeting on January 9, 10 and 11, were told that they have pruned their trees too heavily in some cases and not enough in others. Heavy pruning has not only reduced yield but also has decreased color of fruit due to excessive vegetable growth, especially where a heavy fertilizer program has been followed.

Rotation of orchards to keep them younger met with favorable response. Old trees should be pulled out and young orchards should be set for greater economy in fruit production. Looking to a period of peace in the future, the growers recognized the need of increased research to assist their industry. Resolutions were adopted by the Association to encourage research. Cooperative marketing and processing plants were discussed as a means of improving the status of Pennsylvania fruit growers.



Free book for tractor owners tells about tractor fire traction

HERE'S a new book crammed with useful information for every farmer who owns a tractor. It contains 68 pages of pictures and facts on such subjects as care of farm machinery, use of liquid weights in tractor tires, getting more power out of wartime gasoline, etc.

It explains how B. F. Goodrich tires on your tractor get farm work done faster and easier—how B. F. Goodrich studied the farmers' problems, trying out hundreds of different tread designs to learn more about traction.

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To get the most out of the cleats, they are best arranged in pairs (see photo 1). One cleat is long, the other short; then there is another pair of long and short cleats on the opposite side of the tire. The long cleat crosses the center; the short one is a shoulder cleat—yet they don't touch each other. These paired cleats give a continuous, overlapping grip on the soil. As the tire turns and one cleat leaves the ground, another is grabbing hold. You get continuous traction, a steady pull. Work is done faster.

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Height of the cleats is determined to the hundredth of an inch—worked out by farmers and tire engineers working

together. If cleats are too high they are apt to bend, reduce traction. They also may chip, or break off, wear down quickly on hard surfaces. Low cleats provide less traction. And each cleat in a BFG tire is shaped like a pyramid, reinforced at the base so it won't tear loose. (See photo 3.)

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Some of the other subjects included in the Handbook are: costs of rubber tires; winter care of tractors; handyman hints; how to use concrete on the farm; principles of farm drainage; the miracle of synthetic rubber; driving tips; tire buyers' guide; facts on silos and silage; painting methods; and much other useful, money-saving information.

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HISTORY OF HORTICULTURE

Its Relation to A.P.S.

THE published reports of the American Pomological Society which date back to 1852 are a continuing record of the development of the fruit industry in America. During the early days of horticulture fruit growing in the main was an amateur undertaking. Farmers, fruit growers and nurserymen grew large numbers of varieties of all kinds of fruit. During the beginning of fruit growing, the more discerning among the leaders soon observed that only a few of the many varieties grown possessed superior characteristics. Few growers knew what varieties were most useful. Meetings were finally called and in 1848 the American Pomological Society came into being. The whole of the early efforts of the society were in the direction of getting information together about varieties from individual growers located in various areas. This method was followed at the meetings for 50 years. During this period, regional adaptation of varieties was studied. At the Richmond meeting in 1871, the United States was divided into three main divisions according to latitude—a northern (between 42 and 49°), a central (between 35 and 42°) and a southern division (between 28 and 35°).

The discussions about varieties were national in character, but for the reason that very few people were growing any particular variety or varieties for a living, the discussions were of a personal nature. During this time a Vice-President was appointed for each state and for a number of Canadian provinces. The state reports were remarkably complete and when combined in a national summary soon revealed the potentialities of varieties in different sections of the country.

The Catalog of Fruits recommended by the A.P.S. appeared as Bul. No. 6 of the United States Department of Agriculture in 1897. It was revised two years later and published as Bul. No. 8. In this revision the United States and Canada were divided into 19 pomological districts instead of the former southern, central and northern districts. A third

revision appeared in 1909 as U.S.D.A. Bul. 151. The Nomenclature of the Apple (U.S.D.A. Bul. No. 56 by W. H. Ragan) was a catalog of known varieties from 1804 to 1904 and contained a total of 6,702 varieties of the apple. This and other fruit books published since may be regarded as continuing studies begun by the American Pomological Society. Starting with many varieties, and with the introduction of many new varieties throughout the continuing development of the fruit industry, the fruit industry has become a great business enterprise. The competition between varieties has been significant. Only those which possess desirable tree characteristics and which produce an abundance of fruit with desirable size, color and quality have survived.

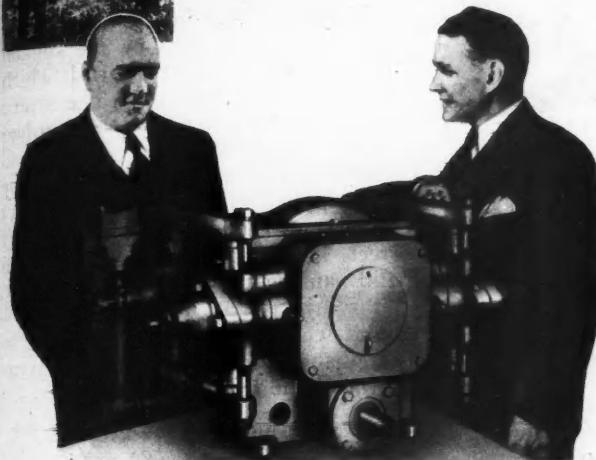
There never has been and perhaps never will be a status quo situation in the fruit business. All of the best varieties have faults or defects, and the search goes on for better varieties.

The Committee on New Fruits of the A.P.S. has prepared a list of new varieties for publication in each of the reports of the A.P.S. During the past 20 years, these lists contain 3,715 new varieties of fruits distributed as follows: apple 754, crab apples 94, peaches 601, strawberries 371, grapes 331, plums 336, pears 238, cherries 155, raspberries 153, dewberries and blackberries 117, apricots 133, nectarines 63, gooseberries and currants 114, miscellaneous berries 51, citrus 88, subtropical and tropical 334. In addition, 1,004 nuts were listed.

It is important to the fruit industry that new varieties do constantly appear and, when of proved performance, that they finally become important varieties in the trade. Most of the new varieties fall by the wayside shortly after introduction, but occasionally one appears which makes horticultural history.

H. L. Lantz
Secretary

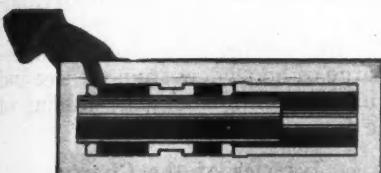
Why growers have found that the "Friend" is their Most Dependable Spray Pump



You can see it's the simplest spray pump—it has only 1/2 to 1/3 as many moving parts as others.

Here's why the "Friend" gives growers steadier high pressure, at lower cost for upkeep:

An ordinary spray pump's plunger has a cup that rubs against the cylinder wall. Cups wear and must be replaced. Cylinders must be relined.



Now look at the plunger of a "Friend" pump. It does not touch the cylinder wall—

no wear on the cylinder. No expense for re-lining or replacement.

Of course there is wear on the "Friend" plunger—but so little wear that grower after grower has used his "Friend" pump for years, without changing the plungers (or the packing).

The packing is lubricated, sealing out abrasive spray solution.

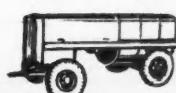
A convenient take-up keeps the packing tight. To stop a leak instantly, just give the packing adjustment screw a slight turn. It's done from the outside, without even stopping the pump.

Compare this with the job of tearing down a pump and installing a new set of cups.



Tractor-Trailer
Sprayers, 4-wheel
Cutunders, Truck

Sprayers and all
other good chassis
styles.



Repacking is easy when the time does come that a "Friend" pump needs it. Takes only a half hour or less.

Clean-cut Simplicity: The "Friend" pump design eliminates many of the parts you find on other high-pressure spray pumps (such as connecting rods and their bearings, and wrist pins).

These are the moving parts of a "Friend" pump:



A yoke with two plungers forms one sturdy unit. This is pushed back and forth by a roller-bearing crank, gear-driven. **There are no other moving parts on a "Friend" pump**, except ball valves the same as on every sprayer.

All roller bearings. The crank assembly turns on two big Timken bearings. You don't find one plain or babbitt bearing on any "Friend" pump. This saves the owner plenty in repair expense and trouble.



Does this appeal to your judgment, as the most practical spray pump you have seen? If so—

Talk to growers who have used "Friends" side-by-side with other sprayers. They will tell you: "For steadier high pressure, and real Dependability, buy yourself a 'Friend'."

FRIEND MANUFACTURING CO.
GASPORT, N. Y.

Dusters with the
same Reliability as
"Friend" Sprayers.



Sizers and Cleaners
for every need.

Easiest to Maintain
in Working Order --
Fewest Moving Parts
"FRIEND"



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NOW.. AUTOMOTIVE SPARK PLUGS WITH AIRCRAFT PRESTIGE AND EFFICIENCY

Bringing the same performance, dependability and extreme quality to automotive spark plugs that are required of spark plugs for a high-flying Super Fortress is the latest achievement of Champion Spark Plug engineers. Champion's research and engineering background brought invaluable experience to aviation from the automotive field. But wartime aviation put spark plugs to many extreme tests—stratospheric flight, super-charging, violent temperature fluctuations, 100 octane gas—all of which Champion-Ceramic Aircraft Spark Plugs met with extraordinary success. Today these same qualities, the same basic materials, precision manufacturing and design are yours in spark plugs for your car, truck, tractor and stationary engines. Demand Champions, the spark plugs with aircraft prestige and efficiency. Champion Spark Plug Company, Toledo 1, Ohio.



BUY MORE AND MORE
WAR BONDS UNTIL
THE DAY OF VICTORY

CHAMPION SPARK PLUGS

INSECT INJURIES

(Continued from page 14)

The fruits are deformed and misshapen. The larvae or worm of this insect tunnels the flesh. Injured fruits generally drop.

Tarnished plant bug injury to peach fruits is readily seen by the sunken areas on the sides of the fruit which are free from any fuzz. The injury makes the peach look as though it had been gouged when very young and then healed over. "Cat-facing" is the term applied to this injury. The insect is very injurious to small or nursery trees, feeding on the terminal growth and causing it to wilt and die back. This injury may look similar to oriental fruit moth injury but it is distinguished by the absence of larvae or borers in the twigs.

Injuries of the Plum

The plum curculio is the most destructive insect of the plum. The nature of its injury has already been discussed under apple and peach injuries. The curculio is also one of the main means of disseminating the brown rot disease of stone fruits.

Among the plum aphids the hop, the rusty and the mealy plum aphids, are most important. Their injury consists of curling of the leaves, stunted growth, splitting of the fruits, and discharge of honeydew from the tree and fruits, resulting from the feeding of the insects.

Injuries of the Cherry

The pear slug frequently affects the cherry. It feeds on the surface of the leaves, skeletonizing them and leaving only the vein system intact. Dark-green to orange, slug-like, slimy larvae of about $\frac{1}{2}$ inch in length, seen feeding on cherry leaves, will convince the observer that they are injuring the leaves.

Cherries infested with cherry fruit flies are undersized, misshapen and turn red ahead of the main crop. One side of the fruit is often shrunken or wrinkled, or partly decayed, and adheres closely to the pit. Examination of injured fruits will reveal a yellowish-white maggot that has no legs and that is about $\frac{1}{4}$ inch long. They make brown burrows through the fruit which are readily seen. The fact that the maggots have no legs will distinguish them from curculio larvae which also are a cause of wormy cherries.

An article on Disease Injuries to Fruits by Eldon S. Banta will appear in the March issue of AMERICAN FRUIT GROWER. Photographs, accompanying this article through the courtesy of the U.S.D.A., Bureau of Entomology and the Ohio State University—Editors.

CHEVROLET



Originator and Outstanding Leader of

CAR AND TRUCK CONSERVATION SERVICE

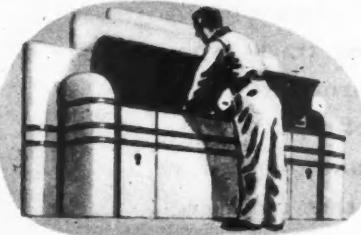
to help "save the wheels that serve America"

**Wise Counsel in December 1941—Wise Counsel Today:
"CONSERVE YOUR CAR OR TRUCK"**

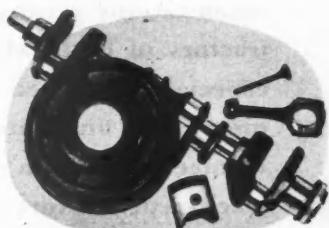
by getting skilled service at your Chevrolet dealer's



SKILLED MECHANICS

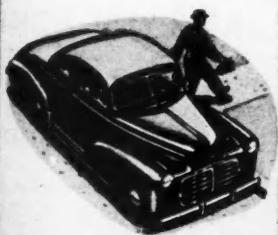


MODERN TOOLS AND EQUIPMENT



CHEVROLET-ENGINEERED PARTS

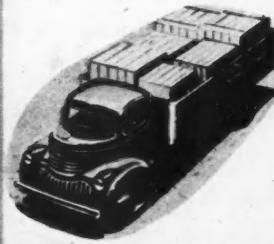
Today
1 out of every 4 cars
is a Chevrolet



BUY MORE WAR BONDS
... SPEED THE VICTORY

Chevrolet's famous "Car and Truck Conservation Plans" have been a vital factor in keeping America's great automotive transportation system alive and running despite the grim inroads made by time, wear and tear. . . . Moreover, Chevrolet Conservation Service will help to keep your car or truck alive and running if you will follow this suggestion. . . . See your Chevrolet dealer for skilled, dependable service at regular intervals. Remember, all signs indicate—more people go to Chevrolet dealers for service than to any other dealer organization.

Today
1 out of every 3
trucks is a Chevrolet



CHEVROLET MOTOR DIVISION
GENERAL MOTORS CORPORATION
DETROIT 2, MICHIGAN

Announcement

Cletrac joins OLIVER

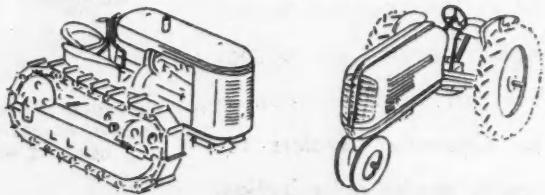
News for every farmer who owns a tractor or expects to own one! To The **OLIVER Corporation**, long known for quality in the design and manufacture of Wheel Type Tractors, is now joined another famous name and product. The "Cletrac" Track Type Tractor is now a product of The **OLIVER Corporation**!

The modern "Cletrac" plant at Cleveland is now one of the six plants making Oliver products.

To farmers and ranchers, this union of strong engineering and manufacturing organizations means a complete line of tractors of both wheel and track types especially designed for farm service. It means the finest in wheel-type tractors to meet most farm needs and the best in track-type tractors where that type is required for hills, marshy or muck land, or special crop requirements.

The dealers who sell Oliver and "Cletrac" Tractors are now in position to serve you more completely than ever. The **OLIVER Corporation**, 400 West Madison Street, Chicago 6, Illinois.

The OLIVER Corporation



CITRUS PECTIN

By J. FRANCIS COOPER
Florida Extension Service

APPLE growers supplying the pectin market may expect competition from citrus fruits after the war. It is expected that 200 tons of citrus pomace will be put up this year at Wauchula, Florida. A plant there has orders for that quantity from the War Food Administration for shipment to Great Britain. The citrus pomace, it is asserted, carries from three to five times as much pectin as apple pomace.

The process of manufacturing citrus pomace was developed at the U. S. Citrus Products Station in Winter Haven, Florida, by George N. Pulley. Last season grapefruit was used principally, but orange pomace is satisfactory.

The peel and pulp from the juice plant is washed, has the seed removed, ground into coarse strips, treated in a hot water bath to remove most of the oils and part of the acids, partially dried by centrifuging, given a cold water bath to eliminate most of the remaining acids, finally is immersed in an aluminum sulphate bath, centrifuged, pressed, and put into dehydrating tunnels. After being dehydrated it is ground, sifted and sacked in 100 pound paper bags.

The product seems to be especially suitable for making marmalades, jellies and gelatin desserts, and a number of American food processors have requested supplies of the material. However, there will be no production of it for the domestic market until all of the order for WFA is supplied. The 200 tons ordered this year represent about all that can be produced at present.

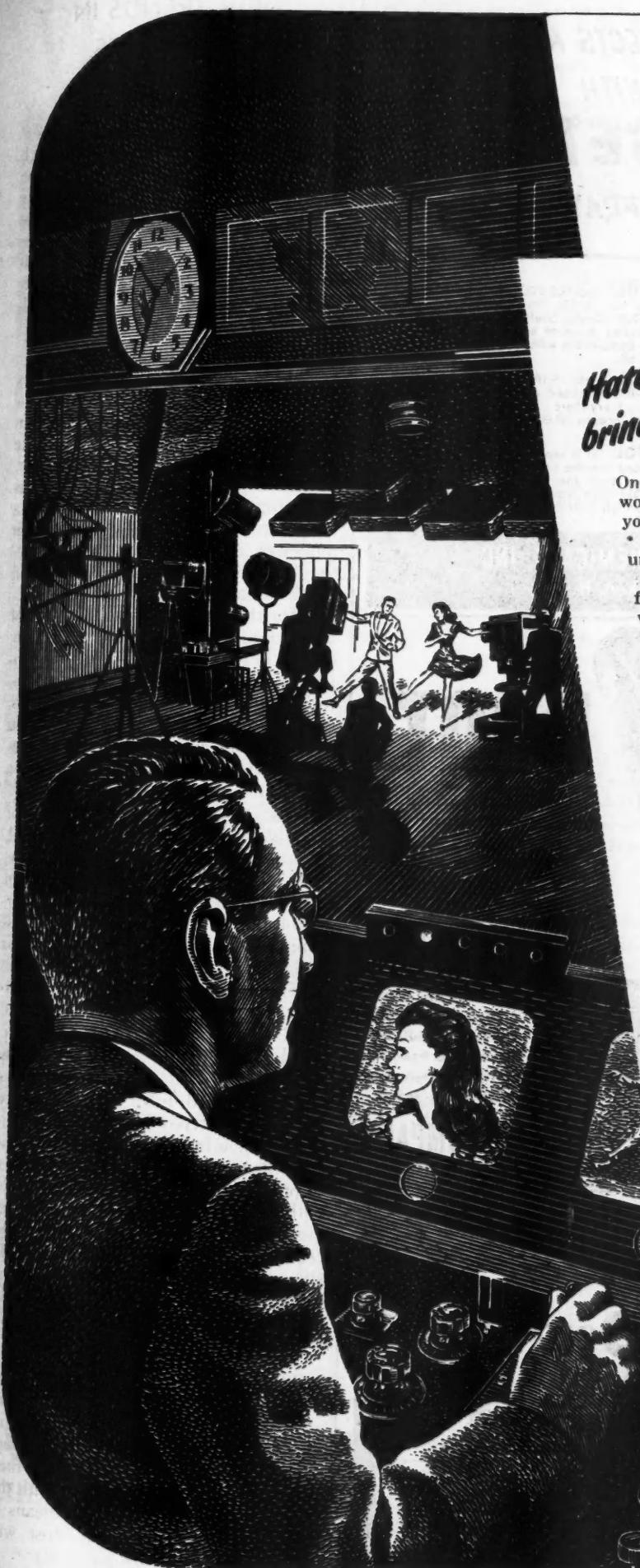
However, citrus fruits are already being canned on an immense scale, and many canning plants will likely install pulp dehydrating equipment in the future.

FOR HONEYBEE STINGS

ACCORDING to a Fort Lauderdale, Florida, beekeeper, honey is a good remedy for honeybee stings. He says,

"It is nature's own remedy which I have used for many years. My little daughter got a bee in her mouth while running through the yard not so long ago and it stung her on the end of the tongue. I pulled the stinger out and put honey on and in five minutes she never knew she had been stung."

"She also got one the other day in the corner of her eye. I used honey and that settled the case again."



Hatches Electrons that bring Television to Life...

One day you'll sit in your living room while world events form an endless caravan before your eyes.

* Television will have "arrived"... out of the unseen universe of the electron.

Nickel will be present on that occasion too—for in all television tubes it is Nickel, coated with barium and strontium oxides, that "hatches" the electrons just as the heater in your incubator hatches chickens. This red hot Nickel base cathode gives off an endless stream of particles of negative electricity. These are the "electrons" that do man's bidding—that enable him to break up a picture into thousands of pieces and fit them back together again on your television screen.

*...just as it helped give
birth to Radio*



Nickel is as essential in the radio broadcasting station's tubes as in the tubes in your home set. Just as it helped give birth to radio, Nickel is assisting television not only in providing the extremely efficient cathode but for other parts of many tubes. In these and dozens of other ways versatile Nickel is your "unseen friend"—as much a part of your daily life as the blueing in your laundry or the yeast in your bread.

The International Nickel Company, Inc.

New York 5, N. Y.

International Nickel—world's largest miners, smelters and refiners of Nickel and Platinum metals... the producers of INCO Nickel alloys, including MONEL and INCONEL.

Seasons
Seasons
**CUT MORE WOOD
TO CUT THE
PAPER SHORTAGE**



KEEP INSECTS AT BAY
WITH
ELGETOL
SPRAY

MEALY PLUM APHID

ROSY AND GREEN APPLE APHID

BUD MOTH

OYSTER SHELL SCALE

ELGETOL and **ELGETOL 30** work with deadly accuracy on *Aphis*, *Bud Moth*, *Twig Borer*, *Crown Gall*, *Oyster Shell Scale* and other pests. These dinitro dormant sprays are water-soluble, and are compatible with oils, although they contain no oil.

ELGETOL —the **SURE** way to control scale insects—is being used extensively by commercial growers everywhere. Agricultural authorities, too, have proved **ELGETOL** to be a completely effective spray.

ELGETOL 30 is especially recommended when oil is used for the control of scale insects. Protect your fruit the inexpensive, easy way—use **ELGETOL**! See your nearest dealer . . . or write for full details.

STANDARD AGRICULTURAL CHEMICALS, INC.

1301 Jefferson St., Hoboken, N. J.

**NEW TRENDS IN
FUNGICIDES**

(Continued from page 10)

ments. They are very complex organic compounds that have a high fungicidal efficiency. While only a few have appeared on the market, literally hundreds of others are possible. The ones now appearing have such trade names as *Fermate*, *Methasan*, *Diethane*, and *Puratized*. A brief statement of the performance of each follows.

Fermate

This is an iron salt of a complex organic acid. It is dark in color, insoluble, and goes into suspension in water. It is used generally at the rate of 2 pounds per 100 gallons of water. It has had very broad trials and has been found effective and safe on a wide variety of foliage. Data from numerous tests indicate that it is effective for the control of most apple and peach diseases, cedar rust (very effective for the apple stage), leaf spot of sweet and sour cherries, pear scab, celery blights, bean anthracnose, tomato anthracnose, potato diseases, tulip blight, black spot of roses, chrysanthemum leaf spot, and rust on snap dragons and carnations. It is reported as a repellent for Japanese beetle and Mexican bean beetle.

It is compatible with all types of wettable sulphurs, arsenate of lead, calcium arsenate, nicotine, rotenone, DDT, oils, and to a limited extent with hydrated lime. It is not compatible with metallic compounds containing copper and mercury. It is probably not compatible with strong alkaline compounds such as lime sulphur, and to a certain extent hydrated lime.

The fact that *Fermate* is widely compatible with most insecticides makes a broad field for use. Since it is less affected by climatic conditions it is safe on more types of foliage than either sulphur or copper compounds. This statement has to do with northern climates only. In regions where bitter rot, blotch, and cedar rusts are prevalent, *Fermate* has shown excellent promise without the accompanying serious injury usually obtained with *Bordeaux* mixture.

Methasan

Methasan is much like *Fermate* except that it is the zinc salt of the same organic compound. Other products of this formula are being tested but trade names have not been given to them as yet. While the field tests with this material have been by no means as complete or extensive as those with

(Continued on page 29)

Serving Through Science

UNITED STATES RUBBER COMPANY

1230 Sixth Avenue • Rockefeller Center • New York 20, N.Y.

Protect
Peaches with

Tennessee Triple Peach Spray
Tennessee Triple Peach Dust

Use the complete dust and spray for peaches!
Protect your peach crop!

Write for Free Bulletins



TENNESSEE CORPORATION

Atlanta, Georgia

Lockland, Ohio

VICTORY IS OUR BUSINESS



WORKING TOGETHER

It takes a lot of work to make an apple pie—

Or a crop—or a healthy and profitable herd—or anything else that farmers produce.

And it takes a lot of cooperation! Nobody knows like a farm family how important *working together* is. There are jobs for everybody on a farm, and everybody has to do them or things just don't run smoothly or come out right.

It's the same way in industry. It takes all kinds of people to keep the wheels turning. And it takes all kinds of organizations, too—both small and large.

And so, over the years, American industry has become a network of related skills and talents, a great system of cooperating companies—some large, some small, some medium-sized—doing business with and for each other—turning out goods by *working together*, like the cogs of one great machine, in mesh.

For instance, during its war production, General Motors has drawn on nearly 19,000 different concerns scattered all over the country, for parts, materials and supplies. Some are big concerns. But three-fourths of the companies supplying us with fabricated parts for war production employ less than 500 people. Nearly half employ fewer than 100.

The same thing happens in peacetime. Manufacturers, small and large, have to *work together*, just as farm people do—each giving as much as he can of what he can. That's the kind of *teamwork* that has made American mass production the envy of the world.

It's interesting to consider these facts when we hear people talking about "big business" and "little business." It's pretty hard to tell where the activities of one leave off and those of the other begin—they're so woven together.

And each depends on the other. General Motors, for example, depends on parts makers, and both depend on other producers—of coal and ore from the mines, of wire and electrical goods, of steel and lumber and paint and glass, of many products of many kinds—including the wool and cotton and leather and other things that come from your farms.

Yes, it takes a lot of work to make a pie, a crop, a tank—and a busy, prosperous, sound and solid nation.

It takes a lot of *working TOGETHER*!

GENERAL MOTORS

CHEVROLET • PONTIAC • OLDSMOBILE • BUICK • CADILLAC • FISHER BODY
GMC TRUCK & COACH • FRIGIDAIRE • DELCO APPLIANCE

Sunday Afternoon—NBC Network—General Motors Symphony of the Air

LAST CALL!

Make sure of getting
your supply...

RUSH YOUR ORDER

for Standard's Dormant Spray Oils!

Wartime uncertainties make it more important this year than ever to order spray supplies *early* . . . and to order spray oil of known quality and proved effectiveness.

To be sure of stopping the insects *before* they endanger your fruit trees and your profits, put your spraying equipment in shape and place your order **NOW . . . AT ONCE** . . . for Standard's ever-dependable dormant spray oils.

DENDROL DORMANT SPRAY OIL

Eighteen years of proved effectiveness in controlling scale, red mite, psylla, casebearers, etc. Its *high* killing power means *low* cost per tree.

STANDARD APHID SPRAY OIL

Developed primarily for complete control of aphids—also highly effective against scale, red mites, and other insects overwintering on fruit trees.

For Later Spraying...

NICO-SOL SUMMER SPRAY OIL

Ready-mixed oil-nicotine spray—efficient, economical—especially valuable in a labor-saving, non-wash program. Due to wartime restrictions, supplies of this product for the coming season may not be adequate.

SUPERLA SUMMER SPRAY OIL

Ideal for use with arsenate of lead, fixed nicotine, and nicotine sulphate.

STANDARD
SERVICE

STANDARD OIL COMPANY
(INDIANA)

910 S. Michigan Avenue, Chicago 80, Illinois

SURPLUS PROPERTY

HARDWARE AND ELECTRICAL ITEMS AVAILABLE

THROUGH the "Surplus Reporter," the Treasury Department catalog of surplus property, which is issued weekly to manufacturers, wholesalers, retailers, chains, and cooperatives who have listed themselves with the Office of Surplus Property in the various regions, the general public is becoming aware of the many different commodities which from time to time are being released by the U. S. Government for ultimate consumer use.

Among the items listed in the current issue of the "Surplus Reporter," are material for the construction of several hundred thousand wooden crates, numerous electrical items, and an undetermined number of hardware specialties.

In urging civilians to constantly check with their local dealers for commodities which have long been scarce, M. P. Shlesinger, Director of the U. S. Treasury Department's Office of Surplus Property in Region III, located at 1126-21st St., N.W., Washington, D.C., expects a flow of inquiries from the dealers and would welcome the opportunity to supply any information in regard to the sale of surplus consumer goods under his direction.

An invitation to visit his Region's show room located at the same address, wherein is displayed many samples of surplus goods which should be of great interest to all merchants and dealers and to the consumer, was extended by Mr. Shlesinger in a recent interview. Recently Mr. Shlesinger announced the sale of 48 vehicles held at the Naval Storage Depot, Brandywine, Maryland. In addition to the 48 trucks of various makes and types, there were 22 truck bodies which were included in the sale. The public participated in this event by advising their local dealers of their needs, inasmuch as sales of any kind from and through Treasury's Office of Surplus Property, are made to dealers and Tax Supported Agencies only.

One of the difficulties frequently confronting the Office of Surplus Property is the disposal of commodities no longer considered necessary to the war effort, is that of finding manufacturing and civilian uses for items of special shape and construction, or of material ordinarily not used in industry. Rowland D. Schell, Director of the Cincinnati, Ohio, regional of-

fice, disclosed recently in an interview.

"Hard-to-get items, such as the several million surplus flashlight batteries recently offered for sale, are quickly absorbed by a waiting market; the same quantity of used ammunition boxes, however, might go begging, due to their special construction or condition," he continued.

It is a far cry from providing for the comfort of a well-filled mattress to contributing to the relief of the present paper shortage, but such was the outcome of a recent sale of many thousands of cotton felt mattresses and pillows.

Having served its purpose in Army camps and hospitals, and subject to sanitary restrictions which prevented its re-sale to civilians, an immediate use of the bedding was found in the large paper mills of the country where the cotton fiber was converted into pulp to emerge as fine writing paper. This instance is cited as an example of Treasury's constant effort to salvage basic materials and exhaust their useful possibilities before consigning them to the scrap pile.

The Surplus Property Board announced recently that the five disposal agencies—Reconstruction Finance Corporation, the Procurement Division of the Treasury Department, United States Maritime Commission, War Food Administration and Foreign Economic Administration—disposed of \$25,557,000 worth of surplus war property during the month of November, at 74 percent of cost or appraised value. In the six months from June 1 to November 30, 1944, surplus war property disposed of by disposal agencies amounted to \$135,164,000, which compares with total acquisitions of \$913,239,000 during the same period.

Additional information on war surplus property may be obtained from any one of the eleven Regional Offices of the Treasury, which are located in the following cities: New York, New York; Boston, Massachusetts; Cincinnati, Ohio; Chicago, Illinois; Kansas City, Missouri; Fort Worth, Texas; Atlanta, Georgia; San Francisco, California; Denver, Colorado; Seattle, Washington; Washington, D.C. For full address refer to the war surplus map in the October issue of *American Fruit Grower*.

NEW TRENDS IN FUNGICIDES

(Continued from page 26)

Fermate, the indications are that it is less effective in the control of fruit diseases than Fermate, but it is somewhat superior for the control of certain vegetable diseases, particularly those of potatoes and tomatoes. Its compatibility range is less familiar but probably about the same as Fermate.

Dithane

This is a trade name given to a slightly different product. It has been widely tested and shows promise in many fields. It probably reacts with other compounds much as Fermate.

Puratized

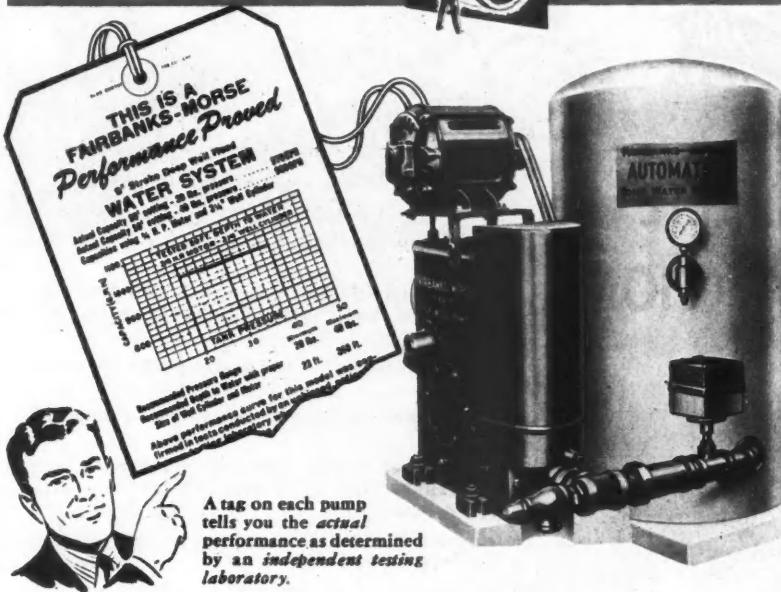
This is a very complex organic mercury compound. It is an entirely new type of fungicide used in a soluble form in the extreme dilutions of 1 to 8000 to 10,000. The results of one year's tests in Ohio indicate that it is safe and effective for the following crops and diseases: apple diseases (so far, excellent control of scab and bitter rot), tomato diseases (especially anthracnose), and potato diseases (early and late blights).

In most cases the margin of safety to foliage is rather sharp, though further tests may show that greater dilutions may be made. It was found that no dilution was safe on roses.

It is compatible with arsenate of lead, hydrated lime, calcium arsenate, nicotine, and DDT. Its compatibility with other fungicides and insecticides has not been determined. Tests with diluents and stickers have not been made. However, in a spray none are needed because it goes into suspension or dilution well and seems to have a lasting effectiveness that is remarkable. Why a soluble material in such an extreme dilution sticks and lasts is explained by one of two theories. It is claimed to be electrically positive, whereas leaf surfaces are electrically negative thus causing the chemical to become firmly attached. The other theory is that the chemical is actually absorbed into the epidermis of the leaf and remains there permanently, which would make it both a preventative and curative fungicide. At any rate it is one of the most effective fungicides yet known. Just when the product will be made available to the fruit trade is not known.

During the season of 1944 a series of tests were conducted in southern Ohio for the control of bitter rot on Grimes. Fermate, Puratized, Methasan, and a 4-6-100 Bordeaux were compared. The results are given in the table accompanying this article.

IT'S WHAT'S *Inside* THAT COUNTS



SAVE MONEY TWO WAYS WITH THIS DEEP WELL PUMP

Costs Less to Buy... Costs Less to Run

Every farm needs the comfort and convenience of running water. But why pay more for it than necessary? Fairbanks-Morse Deep Well Pumps do not need large, excess-power-consuming motors. So they cost less to buy and less to run. They can make these savings because they have the exclusive Fairbanks-Morse upper compensating cylinder. This divides

the work evenly between the up and down strokes.

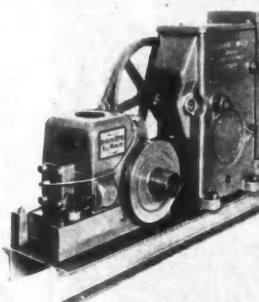
No power is lost through side thrust—power is applied to the piston rod straight up and down. A built-in air pump maintains air supply in the pressure tank. Six-inch or nine-inch stroke pumps may be had alone or as part of a complete automatic pressure tank unit as shown above.

The Same Fine Pump with "Z" Engine Drive

Where electricity isn't available, insure lastingly dependable, low-cost pumping by using a Fairbanks-Morse engine-driven deep well unit. It includes the efficient pump described above and the famed Fairbanks-Morse "Z" Engine. Complete pressure tank units are available with a full range of pump and engine sizes.

★ ★ ★

Your Fairbanks-Morse dealer can recommend, without bias, the best type of water system for your individual need... because Fairbanks-Morse makes all types. See your dealer or write to Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.



Buy More War Bonds

Fairbanks-Morse

A name worth remembering



Water Systems • Sump Pumps • "Z" Engines • Light Plants
Windmills • Pump Jacks • Hammer Mills • Corn Shellers

Cut Spraying Costs . . .

WITH

FARQUHAR
IRON AGE
YORK, PA.



COMPLETE PROTECTION

You can have complete protection at low cost now! See your Iron Age Dealer or write today for an Iron Age Sprayer Catalog.

- More than 100 models assure you the EX-
ACT Iron Age machine to spray with ease
and economy.
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Scalecide kills scale, red mite, aphis (delayed dormant), bud moth, case bearer, pear psylla, overwintering codling moth and many other pests. Scalecide also has an invigorating effect on tree growth that is unequalled by any other spray. Apply just before the foliage starts in the Spring. Simple, safe, easy to use. One gallon makes 16 gallons of spray.

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FREE
BOOKLET

CONTROLLING THE CODLING MOTH

(Continued from page 11)

activity would include lead arsenate 3 or 4 pounds and Bordeaux mixture, if a fungicide is needed, otherwise zinc-lime or a $\frac{1}{2}$ -2-100 Bordeaux as a corrective for arsenical injury. At least two and probably three applications of lead arsenate 3 pounds plus a corrective for arsenical injury must be the minimum number of sprays against the second brood in July and August in severely infested orchards. Spraying must continue against the second brood as long as the moth flight, as indicated by bait pail collections, remains high enough to constitute a threat. If nicotine sulphate is available it can be added in the first three or four cover sprays at the rate of $\frac{3}{4}$ pint per 100 gallons, and wherever this is done each tree row should be sprayed on both sides on the same day. The above program of lead arsenate through the season will require washing the fruit at harvest time.

A non-washing schedule against severe infestations means that lead arsenate cannot be used after the third or fourth cover spray and oil should not be used to fortify lead arsenate in the early cover sprays. Oil and nicotine applied at intervals of 7 to 10 days for the remainder of the season constitute the best available insecticide to substitute for lead arsenate. Nicotine in such a combination is usually "fixed" by bentonite. Amounts per 100 gallons of prepared spray are usually as follows: either 1 $\frac{1}{2}$ to 2 pounds of processed nicotine bentonite, "Black Leaf 155," or a nicotine bentonite made by adding 2/3 pint to 1 pint of nicotine sulphate and 4 or 5 pounds of bentonite to the spray tank; and after the tank is nearly full of water add 2 quarts of summer oil emulsion. Tank-mix nicotine bentonite (made from Wyoming bentonite) may leave objectional visible residues that cannot be easily removed. Mississippi bentonite is said to leave considerably less visible residue on the fruit.

FRUITS FOR THE HOME GARDEN, by U. P. Hedrick, is a recent book, written in the style of a "popular seller," and at the same time, containing the technical information of a textbook. Mr. Hedrick is a recognized authority in the field of horticulture. Price \$3.00.

NEW WEED KILLER

(Continued from page 12)

the white clover was killed back to the main stolons, while the bluegrass was darker green in color but not otherwise affected.

To test the residual effect of the material in the soil, treated areas were seeded to several cereals and turf plants 5 weeks after treatment. The seed germinated and grew, and the seedlings were apparently not affected.

With such woody plants as choke cherry, red raspberry, apple, and dewberry the effect at the concentrations used, applied in late summer, was only to check terminal growth and in some cases to kill the tips. Higher concentrations or applications at a different time may conceivably produce greater responses.

At the same time that these tests were being conducted at Geneva, Drs. Paul Marth and J. W. Mitchell of the U. S. Department of Agriculture were carrying on similar tests at Beltsville, Maryland, and the results from both groups, reported in the December issue of the BOTANICAL GAZETTE are similar, and support each other.

Of course, there is much yet to be learned. How will treatment at other seasons of the year mid-summer or fall behave? Will bluegrass be killed then? Will affected plants recover? Is there any danger to animals or to health? Will the soil be harmfully affected? Also, how should the material be applied? At what time for best results? At what concentrations?

Much work will undoubtedly be done during the coming season, and specific recommendations and precautions will be forthcoming. At present, the procedure is to use 2-4-D at the rate of 1 part per thousand of water after first dissolving it in a carrier which is soluble in water. This step is necessary because 2-4-D is, for all practical purposes, not soluble in water. The carrier used is a polyethylene glycol which goes under the trade name of Carbowax 1500, and which is about the consistency of cold cream at ordinary temperatures. For 25 gallons of spray, 3½ ounces of 2-4-D are dissolved in 1 pound of warmed and melted Carbowax 1500. The material can be stored in this way for future use. Before mixing with water it should be warmed and melted. It may be stirred into a gallon or two of water, or it may be mixed with the total amount of water at once. If the water is warm, the material handles better and is more effective. Five gallons of spray will treat 1,000 square feet, or 200 gallons for an acre.

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Contact Insecticide

In their exposed form, these sprays control red spider, codling moth, migrating scale and pear psylla.

Deposit Builder

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Orthol-K alone or in combination sprays of ORTHOL-K and lead arsenate, Black Leaf 40 or Black Leaf 155, provides a strong control measure for two of the most destructive orchard pests in the Eastern United States—codling moth and European red spider.

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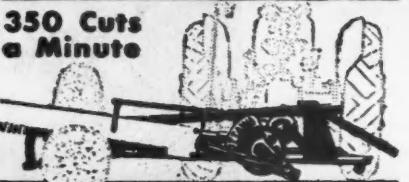
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SPEED SPRAYER

(Continued from page 13)

who saw it in action were impressed by its labor-saving potentialities.

Since these first field trials the machine has gone through many changes, mostly directed toward improving its performance on apples. In outward appearance it is much the same as in 1940; in performance, it is considerably improved. Tops of tall trees are more easily reached and wide dense trees are more thoroughly penetrated. In well-spaced orchards with trees not exceeding twenty feet in height, its performance leaves little to be desired; taller trees, especially where branches intertwine, may not be satisfactorily covered except at slow rate of travel. Such orchards are usually in need of pruning or tree removal or both and proper attention to this operation would, in most cases, correct this condition and allow more economical spraying, thinning and picking.

The Speed Sprayer differs from the conventional high-pressure sprayer in one important respect. Whereas the conventional sprayer uses high-pressure both to atomize the spray solution into fine droplets and to blast them into the trees, the Speed Sprayer atomizes the spray solution at low pressures into an air stream which in turn carries the droplets through and over the trees. The air stream is of the large volume, low velocity type, and is generated by a forty-eight inch propeller revolving in a tunnel at engine speed.

The use of the large volume air stream to carry the spray into the tree gives the Speed Sprayer a distinct advantage in dosage control since the amount of spray delivered through the nozzles into the air stream can be increased or decreased without affecting the "drive" or carrying power of the air stream. Decreasing the pressure or volume of spray delivered through a "spray gun" mounted on a high pressure portable rig, by way of contrast, results in a definite loss of "drive" and carrying power.

In operation, whether mounted on a motor truck or its own wheels, the Speed Sprayer is hauled between the rows of trees at speeds ranging from about 2 to 4 miles per hour. Even slower speeds may be necessary to properly cover large trees in full leaf. To spray peaches and cherries, and other trees of similar size and spacing, the air stream is divided and deflected through and over the row on either side of the sprayer through a two-way discharge head. Larger trees, such as mature apple, are sprayed by deflecting the entire air stream through and over a single

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row through a one-way discharge head. Both sides of all rows should be sprayed in a completed operation.

Accurate control of the air stream is provided through a system of fins or deflectors, located between the air tunnel and the nozzles. These deflectors can be easily and quickly adjusted to direct the air stream higher or lower according to the shape and the height of the tree being sprayed.

The amount of spray material being discharged can be closely regulated as it is piped to the nozzles in four separate "banks" or groups, each group having an individual quick acting gate valve. A Master Control Gate valve is provided for instantly feeding or shutting off the material to all nozzles. Provision is made for adjusting the number of nozzles to avoid waste of material and excessive drenching of foliage and fruit when traveling at slow speeds. All controls are within handy reach of the truck or tractor driver and no other person is required for the Speed Sprayer operation.

Practically all Speed Sprayer users agree that effective spraying can be done with this method against more wind than is possible with any type of spray gun. This is the explanation. The Speed Sprayer discharges sufficient air to displace the air in the tree area and to replace it with air carrying the spray material.

The Speed Sprayer discharges approximately 150,000 cubic feet of air a minute. The space occupied by an apple tree with 35-foot limb spread and 20 feet high is 24,500 cubic ft. If the Speed Sprayer is moving down the tree row at 2 miles per hour, it will pass a 35-foot tree in about 12 seconds. In those 12 seconds the Speed Sprayer will be discharging 30,000 cu. ft. of air.

This ability to do effective spraying against considerable wind is especially important during the period of apple scab sprays in the early spring. It is important to cover an orchard fast and oftentimes to work against fairly stiff winds. This same principle accounts for the thorough penetration of the air stream into and through large trees in heavy foliage during the summer cover sprays for codling moth control.

Both the Speed Sprayer and supply truck are equipped with 500-gallon tanks. A centrifugal pump operated from truck motor through a power take-off transfers the spray mixture from supply truck to spray tank in about 3 minutes. The same pump is used to lift water from ponds or other sources of supply and to agitate the spray mixture. A similar pump on the sprayer continuously agitates the

(Continued on page 34)



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It took the loss of a major portion of a valuable crop to teach Pete Billings that he simply couldn't afford not to protect his trees and vines against the possibility of an infestation of bud and foliage-devouring tree-climbing insects. Pete learned the hard way. We hope you won't have to.

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SPEED SPRAYER

(Continued from page 33)

spray mixture while bypassing a portion of it to the spray-nozzles.

In average operation, a two-man crew can supply and spray out about three 500-gallon tank-loads an hour. This will usually cover 3 to 5 acres of bearing apple orchard per hour, depending on the size of the trees, the stage of growth, and the density of the foliage. Under some conditions crews will average four tanks an hour. Growers generally agree that a Speed Sprayer unit can displace three large high-pressure portable spray rigs. Some place this figures higher because of night spraying, for which the Speed Sprayer is ideally adapted. Thus, a Speed Sprayer unit may save the services of seven or more men.

Those who see the Speed Sprayer in operation for the first time are amazed at the tremendous volume of spray being blown into the air. "Isn't it wasteful of spray material," is one of their first questions. Five years of experience in apple orchards in the East indicate that it is no more—or less wasteful of spray material than the conventional sprayer. Properly regulated, the Speed Sprayer will provide thorough coverage with a minimum loss through run-off or drift. Improperly used, it may be either wasteful or too saving of material, the latter being the greater fault. All too frequently operators are prone to speed up rate of travel to get the job done. This not only reduces "dosage per tree" but does not give the air stream time to penetrate through the tree. Inadequate coverage and unsatisfactory control are the inevitable result of such procedure. If the air stream is not penetrating through the crown of the trees, my advice is "slow down young man, slow down." There is no substitute for thorough coverage whether applied by Speed Sprayer or other device. Thoroughness of application rather than speed pays the higher dividends. Claims of better control following the purchase of Speed Sprayers are common.

Because of its unusual capacity for covering trees rapidly, the purchase of a Speed Sprayer unit frequently corrects a bad equipment shortage and thus provides for more timely and frequent applications. Its capacity for engulfing trees suddenly in a cloud of spray makes it unusually effective in the use of contact sprays, such as nico-

(Continued on page 35)

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THE ELMO CO., Dept. 478 Davenport, Iowa

SPEED SPRAYER

(Continued from page 34)

tine against adult codling moths. This use of nicotine as a moth killer, together with oil as an egg killer and lead arsenate as a worm killer, has found enthusiastic acceptance by many Speed Sprayer owners.

As to thoroughness of coverage, many owners are convinced that the machine does a better job of spraying than the average crew of seven or more men which it displaces. This was more graphically expressed perhaps by the colored boy who for the first time was watching it perform in a Florida citrus grove. As it passed him he was heard to exclaim in open-eyed amazement, "Dat machine has done taken the spray gun right out of my hand!" Others are inclined to concur.

How large should an orchard be to justify purchase of a Speed Sprayer? This question frequently is asked at grower meetings. Based on spraying capacity a single unit will adequately take care of from 100 to 125 acres of average bearing apple trees, and about double this acreage of peaches or cherries. Some of the most enthusiastic owners of Speed Sprayers, however, are growers with from 50 to 75 acres of orchard who are engaged in other farming activities besides orcharding. Spraying, which formerly took up much of their time, has been reduced to a minor operation and they are free to give attention to other tasks. They are inclined, therefore, to charge the expense of the Speed Sprayer to overall operations rather than to the orchard alone.

A preview has been given us of the Speed Sprayer of 1945. Two models will be available: one, a double tunnel outfit for spraying unusually large trees rapidly; the other, a standard single tunnel machine similar to the 1944 model but with increased air and spray capacity. The air stream of both these models is said to enter the rows at a sharper angle than formerly, thus improving coverage between and within the trees.

What is the future of the Speed Sprayer after the war when labor becomes abundant again? Most owners assert that they will never go back to the old slower methods of spraying regardless of labor abundance. Some growers explain that good labor for spraying has always been one of their toughest problems and they have had to carry extra "year men" to be sure to have their spray crews well manned. It seems safe to conclude that as more growers and their spray crews become familiar with the Speed Sprayer, it is here to stay.

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SONG POEMS WANTED—TO BE SET TO MUSIC. Send poem for immediate consideration. FIVE STAR MUSIC MASTERS, 716 Beacon Building, Boston 8, Mass.

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EARLY BIRD TREE BANDS CHEMICALLY TREATED. Kills the Codling Moth. Send orders early. EDWIN H. HOUSE, Saugatuck, Michigan.

SUREKILL TREATED TREE BANDS AVAILABLE FOR 1945. ORDERS BEING BOOKED NOW. WRITE FOR PRICES. M. A. KOELLER, Barry, Illinois.

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MEDIUM-SIZED APPLE GRADER AND WIPER wanted. Prefer Niagara or Bean, retail price \$300 to \$400. RICHARD WALKER, Blythewood Farm Orchards, Nashua, New Hampshire.

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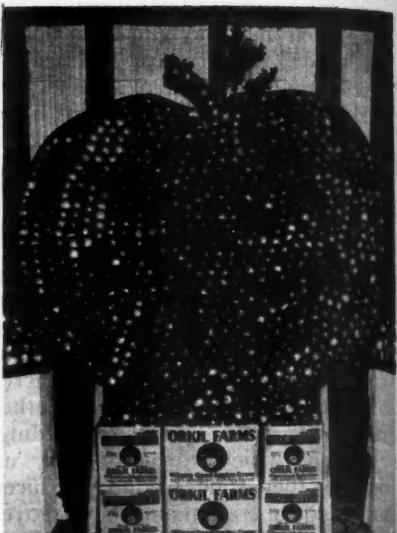
STATE NEWS

(Continued from page 16)

MAINE—The Maine Apple Tree Pool closes this year on February 5. This is operated now by Maine Fruit Producers, 32 Commercial St., Portland, in cooperation with Maine State Department of Agriculture and the Agricultural Extension Service. Advance sales have been heavy and demand appears to be exceeding the supply of trees.

In the first week of March the Extension Service will conduct a series of meetings in orchard sections similar to what was done last winter. This year Professor H. A. Rollins of Connecticut will participate in all the meetings.

At Orono during Farm and Home Week, the meeting for orchardists will be held on Tuesday afternoon, March 27, and the following morning. Program is in preparation.—J. H. Waring, Prof. of Hort., Orono.



Among the finest apples grown in the State of Connecticut are those produced by Orkin Kilbourn, owner of the Orkin Farms, of West Simsbury. Mr. Kilbourn knows how to merchandise fruit, and an example of this was the beautiful exhibit of his apples, appearing at the Connecticut's 54th Annual Meeting.

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NUT GROWER NEWS

NUT GROWERS 34th REPORT

1943 SUMMARY

THE 34th annual report of the Northern Nut Growers' Association for 1943 has been published and mailed to all members. Like other reports of the Association this contains much information of interest to cultivators of hardy nut trees in the northern half of the country. Scientific papers reporting the results of research work with nut trees and many reports from practical growers are included.

A special feature of this year's number is the report of the survey committee compiled by John Davidson as Chairman. The reports of members from many sections of the country have been summarized and many are reported in detail. The questionnaire on which the survey was based was designed to extract as much information as possible from the members on various phases of nut growing. Variety testers, and there are many among the Association members, will find the discussion of varieties of nut trees of especial interest.

The testing of black walnut varieties to determine their relative merits is the subject of a paper by L. H. MacDaniels and J. E. Wilde. The authors report the results of a detailed study of methods of testing black walnuts and set up standards for making tests. Tests of a number of varieties are given. W. C. Munscher and B. I. Brown of Cornell University report the results of studies on the storage and germination of nuts of several species of walnuts. A convenient method of handling the seeds is presented. The same authors present a key to walnut species in the seedling stage. Breeders of nut trees will be interested in studies on catkin forcing and pollen storage of filberts and walnuts by L. G. Cox of Cornell.

A paper from the Connecticut Experiment Station by G. A. Gries reports investigations on juglone, the toxic substance in the bark of black walnut roots and suggests that this material is of fungicidal value.

Many other reports are included.—**GEORGE L. SLATE, Sec'y, Northern Nut Growers Assn., Geneva, N.Y.**



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From where I sit ... by Joe Marsh

Trophies of a Happy Marriage

The Cuppers are about the happiest married couple in our town. Comfortable off, too, after Dee's fifty years of honest work. But their two most prized possessions are an old beer mug and an 1890 Floradora hat.

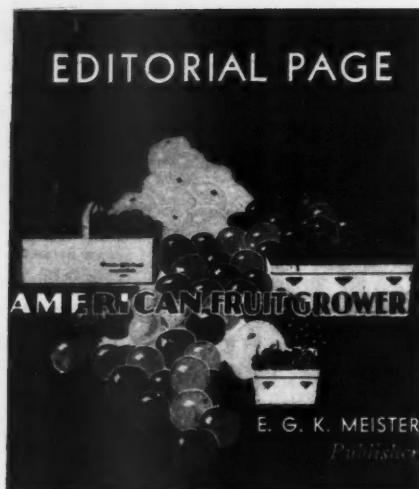
When they were first married Dee allows he couldn't stand the hat; while Jane turned her nose up (privately) at Dee's fondness for a friendly glass of beer from time to time. But each figured it was the other's right ... so they lived and let live.

And as time went by, they realized that the hat and mug

had become important symbols in their marriage—symbols of their decision to respect each other's rights and little differences of opinion.

From where I sit, a lot of marriages would be happier if there were more funny-looking hats and old beer mugs in the background. Tolerance is a mighty good foundation for living happily together.

Joe Marsh



Strange Fruits

THERE WAS A time when the greatest stumbling block in the path of a new fruit was the prejudice people had against the consumption of a strange fruit with which they had no personal acquaintance. Nowadays, new fruits are handicapped less by this kind of prejudice than they are by growing and shipping problems. New fruits are seized upon quickly and with enthusiasm for people are fully aware of the vitamin values of fruits, and they are eager to consume even more than the everyday fruits in their strong desire to build up health and appearance, and to improve the diet of the family as a whole.

This past season this country consumed an avocado crop of 23,200 tons from Florida and California, and a grapefruit crop of 56,020,000 boxes, but Dr. David Fairchild, veteran plant explorer, in looking back over his 40 years of studying and introducing fruits and vegetables from all parts of the world, recalls clearly the early prejudice and resistance against these fruits at the time of their introduction.

This makes us pause to wonder about the fruits which, although unknown, will be on hand for consumption by future generations. But we do not need to wonder for long about the fate of new or strange fruits for we can be sure that ignorant prejudice will not stand in their way as we now are a nation fully cognizant of and avidly hungry for all kinds of fruits.

Hobbies of Fruit Growers

FRUIT GROWING is a way of life, and fruit growers are men, like other men, and it is not unusual to find a fruit grower who has a hobby—a particular individual hobby. This was evidenced again at the recent annual meeting of the Indiana State Horticultural Society where a session on the "hobbies of fruit growers" was conducted and enthusiastically attended.

There was one fruit grower who, having a dam on his premises, stocked the water with fish so that he has a fine private fishing spot for himself and his friends. Another, a commercial apple grower, planted a few plum trees and, in the course of time, he has developed the raising of fine plum varieties as a hobby to such an extent that now the hobby threatens to outgrow itself into a commercial scale.

Then there are the fruit growers who raise bees, nursery stock, Christmas trees, and other diverse products as a hobby. Others go into the field of fruit breeding and sometimes from the results of fruit breeding that was done as a hobby come improved and worthwhile varieties, and knowledge that is of benefit to the industry of fruit growing.

DDT

AT PRESENT American DDT production, except for small quantities for experimental work, has been restricted to military use and there will be no DDT for civilian use for some time. This material, like other insecticides, has both good and bad points and the most important task to be accomplished before the material is publicly placed on the market is the determination of just what are the good and what are the harmful qualities.

It is known that DDT will kill beneficial insects, some of which are parasites of serious insect pests. Also, as yet the effect of DDT on health has not been determined. But a tremendous amount of research is in progress which should clear many of these points in the future.

In the meantime, the fruit grower and farmer would like to be kept posted on the experimental results of DDT development as an insecticide with promising possibilities for use by them in the future.

What's Become of the Quince?

THE QUINCE for many centuries was the favorite pome. It was the "golden apple" of the ancients, dedicated to deities, and looked upon as the emblem of love and happiness. Today its position is far less glamorous and heraldic. It is almost a totally forgotten fruit.

True, its tender flesh bruises easily. It is particularly susceptible to oriental fruit moth and to black rot, and fire blight is a serious disease of the quince. In spite of these unfavorable characteristics the quince once was a very popular fruit in the household, being used in making marmalades, jellies and preserves.

In the old days the introduction of

a new variety of quince was occasion for widespread discourse and experimenting whereas now all the varieties of quince are discarded from many nurserymen's catalogs and, at the most, only two, three or a half-dozen are listed in any catalog.

There are pear-shaped quinces, apple-shaped quinces, and orange-shaped quinces, yet many persons today would not recognize any kind of a quince. There is the CHAMPION quince with large and handsome fruits which have flesh that is almost as tender as the apple. It is delicate in taste and odor. There is the FULLER quince which is characterized by the beauty of its fruits which are rich golden-yellow. In all, there are not a great number of named varieties but, for the most part, the different varieties of quince produce fruits of good quality that, once upon a time, were highly esteemed.

What has become of the quince?

Fruit and Its Appearance

WHY MUST FRUIT which hung so beautifully and in such perfect condition on the tree reach the housewife so bruised and marred in appearance? The question is a frequent one and one that as yet has no favorable answer. The causes of bruising of apples, and other fruits as well, have recently been determined to be due to several factors.

Bruising occurs during the picking operation from pickers pressing the fruit with their fingers, dropping the fruit into the picking bag or pail, banging it against the ladder and limbs, and finally by pouring it carelessly into the field crate or basket.

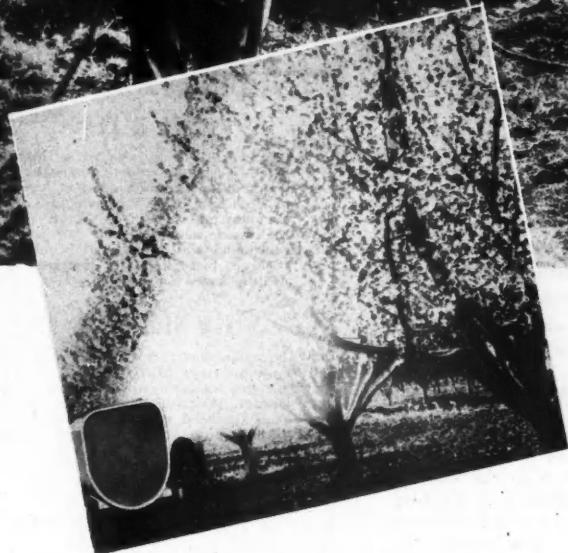
Perhaps some graders cause more bruising than some other orchard operation. Much depends upon the construction and upon the padding applied to the conveyer and other moving parts of the graders.

The trucker, wholesaler, retailer, and consumer cannot be exempted from the causes of bruised fruit. Rough handling on their part will result in just as severe blemishes.

Fruits are living structures and must be treated as such if they are to be at their best, and the handling of fruit is like a chain. If there is a weak spot any place along the line from tree to consumer, that weak spot may break down the whole system of movement.

It is apparent that the time is not far off when bruised and blemished fruit will not find a ready market. All those in the chain of handling fruits must improve conditions and present the public with a product as near like the one hanging on the tree as is humanly possible.

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No matter what your power sprayer requirements are, you can profit handsomely by the many new developments in the famous Myers line.

New models, new methods of application, new pumps are included in a wide range of vital improvements for faster, better spraying with the type and size of equipment best suited to your spraying job. Ask your Myers dealer about the greater speed, capacities and coverage that will be offered in the Myers line and talk with him about your present sprayer needs.

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What to do about CODLING MOTH in 1945

Orchard and packing shed sanitation, plus a carefully planned spray program will control codling moth in 1945. But get the first brood, a basically essential step for control of late infestations. Spray early with the proven winning combination — S-W Arsenate of Lead, S-W Spralastic and Safe-N-Lead for protected, healthy foliage... If you are going to wash spray through the season with S-W Arsenate of Lead, S-W Spralastic and S-W Summer Mulsion... If not equipped to wash spray later with S-W Nico Mulsion.

S-W ARSENATE OF LEAD

This proven Arsenate of Lead is 98% pure Arsenate of Lead, which is 2% higher in content than many other Arsenates of Lead. S-W Arsenate of Lead does not contain a flocculator or suspender because the addition of these would reduce efficiency by reducing the deposit on sprayed fruit. The heaviest deposit is produced by Sherwin-Williams Arsenate of Lead.

S-W SPRALASTIC

The use of S-W Spralastic will make the Arsenate of Lead you are using much more effective in the control of codling moth, because it actually deposits three or four times more Arsenate of Lead on the fruit by increasing the adhesive and spreading properties of the Arsenate of Lead particles and eliminating wasteful run-off. S-W Spralastic is the most efficient spreader ever developed.

*Recommendations for these products apply East of the Rockies only.
Write for Further Information.*

SAFE-N-LEAD

Protect apple foliage by using S-W Safe-N-Lead to completely neutralize the water soluble arsenic found in Arsenates of Lead. Added to Arsenate of Lead in the spray tank, S-W Safe-N-Lead converts the water soluble arsenic into a stable compound which will not "burn" apple foliage, but stimulates the growth of healthy green leaves.

S-W NICO-MULSION

Nico-Mulsion is a combination of nicotine and Summer Mulsion and is recommended for use against codling moth and aphids. When used as spray on apples, it is designed to control newly-hatched codling moth larvae after they have begun to enter the fruit. It also kills the eggs that are about to hatch as well as moths that may be resting in the trees.

S-W SUMMER MULSION

S-W Summer Mulsion is used with Arsenate of Lead to destroy the eggs and larva of late brood codling moth. Summer Mulsion is not a tank-mix product, but is a true oil emulsion, which breaks down when mixed with water to produce a uniform, heavy coating of oil which will not spot apples and does not complicate the washing problem.

SHERWIN-WILLIAMS SPRAY MATERIALS

INSECTICIDE DIVISION

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